AURORA SQUARE PLANNED ACTION

Draft Environmental Impact Statement

December 2014

CITY OF SHORELINE

December 12, 2014

Subject: Aurora Square Planned Action Draft Environmental Impact Statement

Dear Reader,

In 2012, the City of Shoreline (City) designated the Aurora Square Community Renewal Area (Aurora Square CRA), and subsequently adopted the Aurora Square Community Area (CRA) Renewal Plan to guide the renewal of the Aurora Square CRA. The Aurora Square CRA is about 70 gross acres in size, and the intent is for it to redevelop as a revitalized shopping center with private mixed use commercial and residential development, entertainment, and gathering spaces.

One of the mechanisms the City proposes to use to spur private development includes a Planned Action Ordinance based on this Draft Environmental Impact Statement (Draft EIS). A planned action provides more detailed environmental analysis during the early formulation stages of planning proposals rather than at the project permit review stage.

The City anticipates approval of a Planned Action Ordinance identifying thresholds of development and mitigation measures. The CRA Planned Action will also consider:

- transportation facilities for transit, pedestrian, and bicycles to support redevelopment;
- identifying opportunities for better pedestrian access to and from the CRA;
- opportunities and incentives for low-impact and eco-district improvements;
- conceptual exploration of regional stormwater facilities and standard requirements;
- providing exceptional signage and way finding for the site (including sign code amendments); and
- creating "windows" to the site that will allow better interaction between pedestrians and businesses.

Three alternatives are under review in this Draft EIS:

- **No Action**, a State Environmental Policy Act (SEPA)-Required Alternative. This alternative assumes Aurora Square continues with a similar commercial retail and office character and the same square footage of buildings and parking as presently located on site.

17500 Midvale Avenue North ◆ Shoreline, Washington 98133-4905
Telephone: (206) 801-2700 ◆ www.shorelinewa.gov

- **Phased Growth**, assuming a moderate level of development, which introduces 500 dwelling units and adds up to 250,000 square feet of retail and office space beyond present development space.
- **Planned Growth**, a maximum level of growth studied, adding 1,000 dwelling units and 500,000 square feet of retail and office space beyond present development space.

For each alternative, the Draft EIS evaluates the potential effects of future growth and improvements on land use, light and glare, transportation, stormwater, sewer and water, and schools and parks.

Affected agencies, tribes, and members of the public are invited to comment on this Draft EIS. Comments may be provided in writing. Written comments are due no later than **5:00 p.m., January 12, 2015** and should be directed to:

Steven Szafran, AICP, Senior Planner	17500 Midvale Ave N
City of Shoreline Planning & Community	Shoreline, WA 98133
Development Department	sszafran@shorelinewa.gov

For questions you may contact Steven Szafran, AICP, Senior Planner at (206) 801-2500. Thank you for your interest in the Aurora Square Planned Action.

Sincerely,

Rachael Markle

Rachael Markle, AICP, SEPA Official
Planning & Community Development Director
City of Shoreline

FACT SHEET

Project Title

Aurora Square Planned Action

Proposed Action and Alternatives

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Location

The study area is approximately 70 gross acres in size and located at the intersection of N 155th Street and Aurora Ave N. The site is bounded by N 160th Street to the north, Aurora Avenue N to the east, Westminster Way, Fremont Avenue N and N 155th Street to the South, and Dayton Avenue N to the west.

Proponent

City of Shoreline

Tentative Date of Implementation

Spring 2015

Lead Agency

City of Shoreline

Responsible Official

Rachael Markle, AICP, SEPA Official
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City of Shoreline
Department of Planning & Community Development
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17500 Midvale Ave N
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(206) 801-2500

Required Approvals

As legislative items, the Planning Commission has authority to make recommendations on comprehensive plan and development regulation amendments. The City Council has the authority to approve such amendments. Such amendments may include Capital Facility Element and Capital Improvement Program amendments to fold in transportation and stormwater improvements. Development regulation amendments include sign code and noise regulations. A planned action ordinance is also under consideration by the Planning Commission and City Council.

In addition, the State of Washington Department of Commerce reviews proposed comprehensive plan and development regulation amendments during a 60-day review period prior to adoption.

Authors and Principal Contributors to the EIS

The EIS was prepared under the direction of the Economic Development Program Manager, Planning & Community Development Department, and Public Works Department.

Authors of technical analysis include:

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Draft EIS Date of Issuance

December 12, 2014

Draft EIS Comment Due Date

January 12, 2015

Public Comment Opportunities

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Steven Szafran, AICP, Senior Planner
City of Shoreline Planning & Community Development Department
17500 Midvale Ave N
Shoreline, WA 98133
sszafran@shorelinewa.gov

Date of Final Action

Spring 2015

Prior Environmental Review Documents

The Planned Action EIS analysis is being conducted in the context of previous SEPA documents, including:

- City of Shoreline Comprehensive Plan, Final EIS, November 1998
- Comprehensive Plan, Final EIS, November 1998
- North City Sub-Area Plan Planned Action Final Supplemental EIS, June 2001
- Town Center Subarea Planned Action Final Supplemental EIS, July 2011
- Updates to the City of Shoreline Comprehensive Plan, Determination of Non-Significance (DNS) and SEPA Checklist, September 2004
- City of Shoreline Transportation Master Plan (TMP), Development Code and Comprehensive Plan Amendments, DNS and SEPA Checklist, September 2011
- 2012 Update to the Shoreline Comprehensive Plan DNS, September 2012
- Commercial Zone Consolidation Analysis, September 2012.

This Planned Action EIS has also been prepared in the context of adopted plans and regulations. The Shoreline Comprehensive Plan, functional plans (e.g. stormwater plans such as the Boeing Creek Basin Plan), Aurora Square Community Renewal Area Renewal Plan, and development regulations promote compact mixed use redevelopment where infrastructure is available, consistent with design standards, water quality and environmental protection regulations.

Location of Background Data

City of Shoreline Planning & Community Development Department
17500 Midvale Ave N
Shoreline, WA 98133

Draft EIS Availability

The purchase price of a copy of the Draft EIS is based on reproduction costs of printed documents or compact disks (CDs). Hard copies of the Draft EIS are available for review at:

City of Shoreline Planning & Community Development Department
17500 Midvale Ave N
Shoreline, WA 98133

The document is posted on the City's Web site:

http://www.cityofshoreline.com/business/aurora-square-community-renewal-area

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1.0 SUMMARY

1.1 Purpose of Proposed Action

In 2012, the City of Shoreline (City) designated the Aurora Square Community Renewal Area (Aurora Square CRA), and subsequently adopted the Aurora Square Community Area (CRA) Renewal Plan to guide the renewal of the Aurora Square CRA. The Aurora Square CRA is about 70 gross acres in size, and the intent is for it to redevelop as a revitalized shopping center with private mixed use commercial and residential development, entertainment, and gathering spaces.

One of the mechanisms the City proposes to use to spur private development includes a Planned Action Ordinance based on this Environmental Impact Statement (EIS). A Planned Action provides more detailed environmental analysis during formulation of planning proposals rather than at the project permit review stage

The City is anticipated to approve a Planned Action Ordinance identifying thresholds of development and mitigation measures. The CRA Planned Action will also consider:

- transportation facilities for transit, pedestrian, and bicycles to support redevelopment;
- identifying opportunities for better pedestrian access to and from the CRA;
- opportunities and incentives for low-impact and eco-district[1] improvements;
- conceptual exploration of regional stormwater facilities and standard requirements;
- providing exceptional signage and way finding for the site (including sign code amendments); and
- creating "windows" to the site that will allow better interaction between pedestrians and businesses.

1.2 State Environmental Policy Act Process

Purpose

This Draft EIS provides a qualitative and quantitative analysis of environmental impacts as appropriate to the nature of the Aurora Square planned action. The specific purpose of this EIS is to assist the public and local government decision makers in considering future growth at Aurora Square, proposed amendments to the City's municipal code, planned infrastructure, and mitigation measures that would apply to future development actions.

Planned Action

The City proposes to designate the Aurora Square study area as a planned action, pursuant to the State Environmental Policy Act (SEPA) and implementing rules. According to WAC 197-11-164, a Planned Action is defined as a project that is characterized by the following:

- Designated by a Planned Action Ordinance;

[1] The CRA describes the eco-district as follows: "Exceptional environmental wins are achieved when clusters of buildings work together to achieve sustainability in a 'eco-district.' The Aurora Square CRA provides sufficient size to experience economies of scale with cost-effective facilities and infrastructure, whether they be treating storm or waste water, providing clean power, or achieving other environmental goals.

- Analyzed through an EIS that addresses any significant impacts;
- Prepared in conjunction with a comprehensive plan, a subarea plan, a master planned development, a phased project, or with subsequent or implementing projects of any of these categories;
- Located within an Urban Growth Area (UGA);
- Not an essential public facility unless they are accessory to or part of a project that otherwise qualifies as a Planned Action; and
- Consistent with an adopted comprehensive plan.

Projects meeting these requirements qualify as planned action projects and do not require a subsequent SEPA threshold determination, but still require a completed environmental checklist to be submitted. Future planned action projects must be reviewed for consistency with the City's zoning and development regulations, the proposed subarea plan, conceptual site plan, and development agreement where applicable. Planned actions must also acquire all necessary permits, and satisfy all necessary public notice requirements of said permits.

The proposed action studies a range of growth allowed within the Aurora Square property. Consistency with this range of growth and associated mitigation would be ensured through the Planned Action Ordinance and Shoreline Municipal Code (SMC).

Organization of this Document

This Draft Planned Action EIS is organized into chapters with the following purpose:

- **Chapter 1 – Summary:** This chapter provides a brief discussion of the proposed action, the environmental review process, and the public involvement process, as well as a summary of the potential environmental impacts and recommended mitigations measures associated with each EIS alternative.
- **Chapter 2 – Alternatives:** This chapter describes proposal objectives, the proposed actions and alternatives for the Aurora Square property, and summarizes public review opportunities.
- **Chapter 3 – Affected Environment, Significant Impacts, and Mitigation Measures:** This chapter describes the existing conditions for each environmental topic area and includes an analysis of the potential impacts associated with each EIS alternative. Recommended mitigation measures to reduce impacts to less than significant levels are also discussed.
- **Chapter 4 – References:** This chapter contains a list of all documents and personal communications referenced in the analyses contained in Chapter 3.
- **Chapter 5 – Distribution List:** This chapter contains a list of government agencies and community groups who will receive notices of availability or copies of the Draft EIS.

1.3 Public Involvement

The City provided comment opportunities with a Determination of Significance and Scoping Notice issued August 14, 2014, for a 21-day comment period that closed on September 4, 2014 (see Appendix A). The Draft EIS is being issued with a 30-day comment period during which time written comments are being requested (see Fact Sheet). Following the Draft EIS issuance, the Final EIS will respond to public comments.

Public meetings and hearings on the Planned Action Ordinance and other code amendments (e.g. signs) will receive legislative review by the Planning Commission and City Council. Project related meetings and comment periods are advertised at the project webpage: http://www.cityofshoreline.com/business/aurora-square-community-renewal-area.

1.4 Proposed Action, Alternatives, and Objectives

Proposal Objectives

SEPA requires a statement of proposal objectives to guide the formulation of alternatives and their evaluation. The Aurora Square Planned Action objectives are consistent with the Aurora Square CRA Vision:

> *Imagine an open, green plaza in the center of Shoreline, filled with sunbathing and studying students, young families watching their children run and play, an elderly couple enjoying a Central Market picnic, dogs wagging their tails, actors practicing their lines, and the sound of college-age buskers singing with an occasional clink as coins fall into a hat.*
>
> *This is the backdrop to the busy comings and goings of shoppers and lunching workers who relish the time of their day that allows them to visit the renewed Aurora Square shopping center. It is a "one-stop" convenient shopping solution that provides dining, nightlife, and healthy-lifestyle options. It is a community gathering place, where a leg stretching walking easily turns into a serendipitous rendezvous with friends.*
>
> *It is an environmentally sensitive district within walking distance of Metro's Rapid- Ride bus service and the Interurban Trail: the intersection of life, study, entertainment, sustainability and retail.*

Chapter 2 provides additional detail on concepts and implementation.

Proposed Action and Alternatives

Alternative 1: No Action

Under Alternative 1, the No Action Alternative, the property would continue with retail and office uses. Mixed residential and commercial uses, though allowed by the Shoreline Municipal Code (SMC), would not occur. Present suburban style development with low floor area ratios (FARs)[2] would continue at about 0.24. Businesses may change within the buildings but would continue to focus on retail and office uses similar to the current mix.

With Alternative 1 No Action, a Planned Action Ordinance would not be adopted, and sign code and noise regulation amendments would not be made.

The No Action Alternative is consistent with the transportation projects identified in the City's *2014-2019 Transportation Improvement Plan* and *Transportation Master Plan*, but only assumes completion of improvements funded by the *2015-2020 Capital Improvement Plan*. The No Action Alternative includes the restriping N 160th Street from four to three lanes between Aurora Avenue N and Greenwood Avenue N in 2015.

The No Action Alternative is a benchmark from which the other action alternatives can be compared.

Alternative 2: Phased Growth

Under Alternative 2, residential development would be introduced at up to 500 dwelling units. Also, approximately 250,000 square feet of commercial retail or office development would be added to the site. Together the added space would result in a mixed use environment and increased shopping and professional space. The FAR would increase to 0.6, more than doubling the intensity on the site. To achieve this, more parking would be structured and the expanse of surface parking would be reduced in favor of building space.

[2] The gross floor area of all buildings or structures on a lot divided by the total lot area. (SMC 20.20.020)

To incentivize this additional growth at Aurora Square, a Planned Action Ordinance would be adopted which would mean additional SEPA review would not be required, and mitigation measures would be known in advance of the development application.

Sign code amendments would be made which could increase the area and height of signs to increase visibility and create a new brand for the center to help achieve the CRA strategy of: "Re-brand Aurora Square and construct iconic signage for Aurora Square and Shoreline Community College." Amendments to limitations on noise after 10:30 pm would be made to the Shoreline Municipal Code.

In addition to TMP improvements, street improvements would be made to support multiple modes, improved access, and urban street characters that support a mixed use environment. Stormwater would be provided either onsite or, preferably, in a regional facility.

Alternative 3: Planned Growth

Alternative 3 would be similar to Alternative 2 except that 1,000 dwelling units and 500,000 square feet of commercial retail and office space would be added. This level of additional growth would increase the FAR to be more urban in character at 0.9.

As with Alternative 2, a Planned Action Ordinance and sign code amendments would be adopted as part of Alternative 3 to help stimulate growth. Further, multimodal transportation improvements and the option to consider onsite or offsite regional stormwater would be made similar to those described for Alternative 2.

1.5 Major Issues, Significant Areas of Controversy and Uncertainty, and Issues to be Resolved

The key issues facing decision makers include:

- Level of growth to be incentivized in a Planned Action;
- Type of changes to sign and noise regulations to create the mixed use entertainment district;
- Type and location of multimodal transportation improvements;
- Coordination of offsite regional stormwater improvements; and
- Access to offsite and onsite parks and open space.

1.6 Summary of Impacts and Mitigation Measures

Summary of Impacts Common to All Alternatives

This section provides a summary of impacts common to more than one alternative under study. Unique impacts of each alternative are addressed following this section.

Land Use

Under all alternatives, future development on the Aurora Square site would be predominantly commercial in character, though the precise mix of uses and the amount of residential development on the site would vary by alternative.

Overall, the indirect impact of new land uses toward the existing surrounding land uses would be relative to the placement and location of new uses within the CRA study area. Given the existing semicircle of single family residences to the west and the mix of multifamily and commercial space to the north and east, the potential for land use incompatibility decreases as new development is placed more centrally or easterly within the CRA site.

Light and Glare

Under all alternatives, ambient light and glare in the study area would increase as more development occurs on the Aurora Square site and as traffic volumes increase on Aurora Ave N. All alternatives would

result in a predominantly commercial and retail character for the site, which typically produces higher levels of light and glare than residential development. The precise level and nature of the additional light and glare produced would vary by alternative. While Alternative 1 would continue existing development patterns and signage requirements, Alternatives 2 and 3 would introduce mixed use commercial and residential elements to the site, including the potential addition of an outdoor entertainment performance venue.

Light and glare impacts for Alternatives 2 and 3 are essentially the same in character and differ in amount on intensity and glare being produced. This difference in light and glare production corresponds to the respective levels of redevelopment proposed under each alternative.

Transportation

Under all alternatives, additional traffic generated by growth in the region would result in increased traffic delays on major transportation routes, including Aurora Avenue N. Other impacts common to all alternatives would include increased intersection delays during weekdays and weekends, as well as increased traffic related to seasonal and holiday shopping periods. Specific land uses may increase or decrease traffic impacts during peak periods. For example, a movie theater would generate higher evening and weekend traffic, where as an office use would result in higher levels of impact during morning and afternoon commute periods. All alternatives would have impacts to transit, pedestrian and bicycle travel, depending on the uses.

Stormwater

Under all alternatives, impervious surfaces on the Aurora Square site would contribute to stormwater runoff to receiving water bodies, which could carry pollutants, such as petroleum, metals, and chemical residue from fertilizers and pesticides. Future construction in the study area could also increase the input of sediment into water bodies through runoff.

All action alternatives would have similar impacts related to potential increases in impervious surfaces, since all alternatives would be subject to the dimensional requirements of the Mixed Business (MB) zone, as specified in Section 20.50.020 of the Shoreline Municipal Code (SMC). Although the allowable 95% hardscape coverage in this zone is higher than the existing approximate 80% hardscape coverage in the study area as a whole, the portions of the study area most likely to redevelop have higher existing impervious coverage in the 90-95% range. As a result, none of the action alternatives are anticipated to result in significant increases impervious surfaces.

Sewer and Water

Under each of the alternatives, the demand for sewer and water services will increase as development of the Aurora Square area will generate additional population and employment.

It is anticipated that the number of commercial accounts would increase under all alternatives, and the number of residential accounts would increase under Alternatives 2 and 3. Water system infrastructure surrounding the Aurora Square area meet the fire flow requirements needed for the proposed growth under all alternatives.

Upgrades to the sewer and water lines within the Aurora Square area will be needed as the additional potential commercial and residential development will cause a greater demand on the sewer and water system.

Schools and Parks

Under Alternatives 2 and 3, the demand for Parks and Schools will increase due to the increased residential and commercial development planned under these alternatives.

Additional growth under Alternatives 2 and 3 would generate additional school children. For the school to maintain the current student to teacher ratio (17.3 students for every teacher), the Shoreline School District may need to hire additional teachers. It is important to note that multifamily developments, the likely housing unit type, tend to generate fewer children than single family developments.

Summary Matrix of Impacts and Mitigation Measures

Table 1-1 provides an analysis of each alternative's environmental effects. For the complete context of the analysis, the reader is encouraged to read Chapter 3.

Table 1-1.Summary of Impacts Unique to Each Alternative

Element of Analysis	Alternative 1 No Action Alternative	Alternative 2 Phased Growth Alternative	Alternative 3 Planned Growth Alternative
Land Use			
	Alternative 1 is not expected to cause significant direct or indirect impacts. Conditions that led to the formation of the CRA Renewal Plan would continue.	A mixed use environment would be created with residential development introducing up to 500 dwelling units. Additionally, approximately 250,000 square feet of commercial, retail or office development would be added to the site. Potential indirect impacts to nearby land uses would include increased pedestrian and vehicle traffic, increased light and noise, and increased height and bulk of physical buildings to the overall area.	A mixed use environment would be created with residential development introducing up to 1,000 dwelling units. Additionally, approximately 500,000 square feet of commercial retail or office development would be added to the site. Potential indirect impacts to nearby land uses would be similar to Alternative 2 but possibly more intense including increased pedestrian and vehicle traffic, increased light and noise, and increased height and bulk of physical buildings to the overall area.
Light and Glare			
	Alternative 1 is expected to have light and glare impacts similar to existing conditions.	Alternative 2 would introduce new, more urban development to the Aurora Square site including new residential development; entertainment oriented spaces; higher densities of commercial and office space; and new and larger types of signs. Light and glare produced from these sources would impact neighboring uses.	Alternative 3 would introduce similar urban development to the Aurora Square site as Alternative 2 but in greater intensity and kind. These new uses would include new residential development; entertainment oriented spaces; higher densities of commercial and office space; and new and larger types of signs. Light and glare produced from these sources would impact neighboring uses similar to Alternative 2 but in a greater degree.

Element of Analysis	Alternative 1 No Action Alternative	Alternative 2 Phased Growth Alternative	Alternative 3 Planned Growth Alternative
Transportation			
Intersection Operations	During the 2030 PM peak hour, the N 155th Street/Aurora Avenue N intersection would operate at LOS F. Because Aurora Avenue N (SR 99) is a designated Highway of Statewide Significance, intersections on this facility are exempt from the City's LOS D standard. The intersection of N 145th Street/Greenwood Avenue N would operate at LOS E, but is outside the City of Shoreline city limits and is not subject to the City's LOS standard. All other study intersections are forecasted to operate at LOS D or better.	During the 2030 PM peak hour, the N 155th Street/Aurora Avenue N intersection would operate at LOS F and the N 160th Street/Aurora Avenue N intersection would operate LOS E. As with Alternative 1, these intersections are exempt from the City's LOS D standard. The intersection of N 145th Street/Greenwood Avenue N would operate at LOS E, but is outside the City of Shoreline city limits and is not subject to the City's LOS standard. All other study intersections are forecasted to operate at LOS D or better.	Similar to Alternative 2.
Volume-to-Capacity Ratio	Northbound Westminster Way between Greenwood Avenue N and Dayton Avenue N exceeds a 0.90 volume-to-capacity ratio (0.94); however, the segment meets the standard because the intersection at Westminster Way N/Dayton Avenue N is forecast to operate at LOS B.	Northbound Westminster Way between Greenwood Avenue N and Dayton Avenue N exceeds a 0.90 volume-to-capacity ratio (0.97); however, the segment meets the standard because the intersection at Westminster Way N/Dayton Avenue N is forecast to operate at LOS B.	Northbound Westminster Way between Greenwood Avenue N and Dayton Avenue N exceeds a 0.90 volume-to-capacity ratio (0.98); however, the segment meets the standard because the intersection at Westminster Way N/Dayton Avenue N is forecast to operate at LOS B.
Transit Impacts	Transit ridership is expected to increase in proportion to the area's population growth. However, lack of pedestrian improvements would likely impact these numbers. Development by the Shoreline Community College under its 2006 Master Development Plan would be a factor in the growth in transit ridership in the area.	Transit ridership would be increased under Alternative 2. The addition of residential and office land uses would result in increased demand for transit services particularly during commute hours. Access to transit would be improved by non-motorized internal connections within the CRA site and street frontage improvements that would occur with redevelopment.	Transit ridership would be increased under Alternative 3. The addition of residential and office land uses would result in increased demand for transit services particularly during commute hours. Access to transit would be improved by non-motorized internal connections within the CRA site and street frontage improvements that would occur with redevelopment.
Pedestrian and Bicycle Impacts	Alternative 1 includes new bicycle lanes on N 160th Street as a result of restriping this facility from 4 lanes to 3 lanes. No major pedestrian improvements would be constructed under this alternative. Growth in pedestrians and bicyclists would be proportionate to area population growth.	With redevelopment of the CRA, Alternative 2 would improve pedestrian and bicycle facilities within the CRA site and along the street frontages. The frontage improvements for N 160th Street will include a two-way cycle track on the south-side of the street.	With redevelopment of the CRA, Alternative 3 would improve pedestrian and bicycle facilities within the CRA site and along the street frontages. The frontage improvements for N 160th Street will include a two-way cycle track on the south-side of the street.

Element of Analysis	Alternative 1 No Action Alternative	Alternative 2 Phased Growth Alternative	Alternative 3 Planned Growth Alternative
Construction Impacts	No construction impacts are assumed with the No Action Alternative.	Transportation impacts for the action alternatives due to construction activity would likely be moderate and would consist primarily of temporary lane closures or entire road closures during construction. Appropriate construction management, including development of detour routes, and appropriate phasing of development plans should be considered to mitigate vehicle, transit, and non-motorized impacts during construction.	Similar to Alternative 2.
Stormwater			
	With no significant changes in building areas and uses, it is anticipated the buildings and parking areas would mostly remain in their current configurations; therefore stormwater impacts related to added impervious surfaces or construction activities would be minimal.	Similar to the No Action Alternative, impacts related to added impervious surfaces would be minimal. The stormwater benefit of this alternative is expected to be greater than No Action due to stormwater management requirements for new and replaced impervious surfaces.	Alternative 3 would require development of a larger portion of the study area than Alternative 2. However, as with other alternatives, impacts related to added impervious surfaces are anticipated to be minimal. The stormwater benefits of Alternative 3 are anticipated to be the greatest of the three alternatives due to the application of stormwater management practices over the largest area.
Sewer and Water			
Water	Alternative 1, assuming full utilization of the commercial space, will support 1,528 employees. The current water system has the capacity to support this increase.	Alternative 2 will generate an additional 1,220 residents and 833 net employees. This increase will generate an additional 63,500 gallons per day (gpd) related to residential usage. SPU was provided with a description of the growth and has indicated that the water system has the capacity for this growth.	Alternative 3 will generate an additional 2,440 residents and 1,667 net employees. This will generate an additional 127,000 gpd regarding residential usage. SPU was provided with a description of the growth and has indicated that the water system has the capacity for this growth.

Element of Analysis	Alternative 1 No Action Alternative	Alternative 2 Phased Growth Alternative	Alternative 3 Planned Growth Alternative
Sewer	Alternative 1, which would fully utilize the commercial space, would have an average annual commercial demand of 6,601 gpd.	Alternative 2 would generate 500 residential units, creating an average annual residential demand to 42,500 gpd. Alternative 2, which would create an additional 833 employees beyond the No Action level, will increase the average annual commercial demand to 3,600 gallons per day (gpd). The overall average annual demand will increase to 46,100 gpd. The Ronald Wastewater District estimates sufficient capacity to serve the added growth.	Alternative 3 would generate 1,000 residential units creating an average annual residential demand of 85,000 gpd. Alternative 3 would create an additional 1,667 employees beyond the No Action Level, and increase the average annual commercial demand to 7,200 gpd. The overall average annual demand will increase to 92,200 gpd. The Ronald Wastewater District estimates sufficient capacity to serve the added growth.
Schools and Parks			
Schools	Alternative 1 would not generate any additional demand for educational services.	Based on the numbers of proposed residential units and the District's generation rates, Alternative 2 would result in 85 elementary school students, 25 middle school students, and 50 high school students. In order to maintain the current student to teacher ratio, the Shoreline School District would need to assure adequate teaching staff and classroom space.	Based on the number of proposed residential units and the District's student generation rate, Alternative 3 would result in 170 elementary school students, 50 middle school students, and 100 high school students. In order to maintain the current student to teacher ratio, the Shoreline School District may need to add teachers and classroom space.
Parks	Alternative 1 would not increase resident population in the study area, and therefore would not generate a substantial demand for parks and recreational facilities.	Alternative 2 will increase the resident population with the creation of 500 dwelling units. The new residential units would require 25,000 square feet of open space. Commercial development would provide 50,000 square feet of public space.	Alternative 3 will increase the resident population with the creation of 1,000 dwelling units. The new residential units would require 50,000 square feet of open space. Commercial development would provide up to 100,000 square feet of public places.

Source: BERK Consulting, 2014

Summary Matrix of Mitigation Measures

Table 1-2 provides a summary of mitigation measures proposed in Chapter 3 of the EIS.

Table 1-2. Summary Mitigation Measures

Element of Analysis	Summary of Mitigation Measures
Land Use	Development in the analysis area would be subject to the City's existing design review process and would be required to comply with all applicable urban design principles. In addition to design review and the application of design guidelines, development in the MB zone would be required to comply with all applicable development regulations contained in the Shoreline Zoning Code. Location and siting of new uses would consider their placement relative to existing surrounding land uses.
Light and Glare	Development in the analysis area would be subject to the City's existing design review process and would be required to comply with all applicable urban design principles and development regulations contained in the Shoreline Zoning Code. The outdoor venue would be designed to orient light and glare away from sensitive receptors.
Transportation	*Frontage Improvements* When a property redevelops and applies for permits, frontage improvements (or in-lieu contributions) and right-of-way dedications if needed are required by the City of Shoreline Municipal Code (SMC 20.70). If right-of-way (or an easement) is needed, it also would be required/dedicated by the development to the City. The City has developed specific cross sections for City streets describing the travel lanes, sidewalk widths, bicycle facilities, and on-street parking. As part of the Aurora Square Planned Action EIS, customized designs were developed for 160th Street, Westminster Way N, N 155th Street, and Aurora Avenue N (see Appendix B). The Aurora Square CRA frontage improvements are described in detail under Section 3.3. Other frontage improvements would follow the City's standard designs (e.g. west and south borders with Dayton, Fremont, and 155th along WSDOT area). The City may determine an allocation of responsibility/cost for required improvements to future redevelopment proposals proportionate to the development size or impact. *Access Improvements* Preliminary CRA plans include a new north/south internal street that will form the primary connection between Westminster Way N and N 160th Street. This north/south internal street would add a new intersection at N 160th Street. The redeveloping CRA properties will need to analyze the traffic operations of the new intersection and may be required to construct a signal at the new intersection if signal warrants are met. *Concurrency* Future proposals would meet the transportation concurrency requirements and the Level of Service (LOS) thresholds established in SMC 20.60.140 Adequate Streets. *Impact Fees* The City of Shoreline adopted Transportation Impact Fees effective January 1, 2015 per Shoreline Municipal Code (SMC) Chapter 12.40. As new development occurs within the CRA, each development would be assessed a per trip fee based on the number of new trips added to the street network. *Commute Trip Reduction* The City has adopted a Commute Trips Reduction Program (SMC 14.10) consistent with State Requirements under RCW 70.94.527. Any new employers within the Aurora Square CRA with 100 or more employees arriving between 6:00 AM and 9:00 AM would be required to prepare and submit a Commute Trip Reduction Program to the City. Actions could include provision of priority parking for carpools, transit pass programs, and subsidies or other incentives for non-single-occupant, transit, or non-motorized commuters. *Internal Pedestrian Access* Chapter 20.60.150 of the SMC requires new development to provide pedestrian facilities that connect street right-of-way to building entrances, safe access to parking

Element of Analysis	Summary of Mitigation Measures
	areas, and connections connecting commercial developments. *Other Potential Mitigation Measures* The Aurora Square CRA would benefit from additional left-turn capacity for northbound traffic on Aurora Avenue N. Potential options include adding a second northbound left-turn lane at the N 155th Street/Aurora Avenue N intersection or by adding a mid-block left-turn lane on northbound Aurora Avenue N. The option of adding a second left-turn lane at N 155th Street/Aurora Avenue N would benefit the Aurora Square CRA property owners and regional traffic flows by increasing intersection capacity and reducing delay.
Stormwater	*Applicable Regulations and Commitments* Future development under all alternatives will comply with local, State, and Federal clean water regulations, including the Clean Water Act, the Washington State Department of Ecology's Stormwater Management Manual for Western Washington, and the Shoreline Municipal Code (SMC). *Stormwater Retrofit* Redevelopment of the Aurora Square site under any of the alternatives will be subject to requirements in the Stormwater Management Manual for incorporation of best management practices, including replacement of hard surfaces, which will result in a net benefit to the affected stormwater environment. *Low Impact Development* The Stormwater Management Manual for Western Washington requires the incorporation of LID improvements to treat runoff from applicable new and replaced impervious surfaces. The precise nature of LID improvements appropriate to the site would be determined during project design. *Regional Flow Control* The City of Shoreline is currently evaluating options for regional flow control facilities in the vicinity of the study area. Creating a downstream regional flow control facility to serve the study area, if pursued by the City, would require additional study and analysis to verify feasibility, preparation of regional facility basin plan for review by Ecology, environmental analysis and permitting, and final design and construction.
Sewer and Water	*Sewer* Currently, new development is required to pay a general facilities fee of $2,506/ unit by the Ronald Wastewater District. Shoreline implements Chapter 20.60 SMC, Adequacy of Public Facilities, and requires adequate sewer disposal. The Aurora Square Community Renewal Area Plan promotes the use of an eco-district. This could result in private development taking advantage of heat recovery from wastewater systems. Sewer mains within Aurora Square are privately owned, and any upgrades will require coordination. However, as a practice, the Wastewater District takes control of sewer mains of a certain size. The Ronald Wastewater District would assume control of private sewer mains when the sewer main is larger than 8 inches. The City of Shoreline would assume control of private sewer mains when the sewer main is larger than 6 inches. If updates are made to the private sewer mains within Aurora Square, some of them would be larger than 8". *Water* SPU has adopted a water system plan and considered City of Shoreline Zoning as of 2012 to help determine system needs; city zoning indicated a mixed use designation for the subject property (SPU Water System Plan 2013). SPU design standards indicate that fire flow is determined based on the City's Fire Code and considered when issuing Water Availability Certificates. Until such time as the City implements its water utility, SPU will determine availability of services at the time of development (i.e. Certificates of Availability).

Element of Analysis	Summary of Mitigation Measures
	Shoreline implements Chapter 20.60 SMC, Adequacy of Public Facilities, and requires adequate water supply and fire protection. Shoreline also implements Chapter 13.05 SMC, Water and Sewer Systems Code, and applies King County codes and standards. As the City of Shoreline continues in its efforts to create a water utility, there will be updates to City standards as appropriate. The current water system infrastructure and supply are able to meet the additional residential and employment need. The water mains inside the study area are owned privately, and there would need to be coordination if the privately owned water mains need to be extended.
Schools and Parks	*Parks* The Planned Action includes a proposed bike path from Aurora Square westward to the Shoreline Community College and nearby Highland Terrace Elementary School, both of which have recreation facilities. In SMC 20.50.240 Site Design, Subsection G, the City requires multifamily open space at a rate of 50 square feet per dwelling unit and a minimum of 800 square feet. The City's commercial site design standards at SMC 20.50.240 Site Design, Subsection F, require public places within commercial portions of development at a rate of four square feet of public place per 20 square feet of net commercial floor area up to a public place maximum of 5,000 square feet. The City of Shoreline does not charge park impact fees. The City of Shoreline could use a fee in lieu approach to redirect a portion of the onsite open space towards a more centrally located public space within or adjacent to the Aurora Square property. *Schools* The City of Shoreline does not charge school impact fees. The District is preparing a Capital Facilities Plan, which may be the basis for charging impact fees in the future.

Source: BERK Consulting, 2014

1.7 Significant Unavoidable Adverse Impacts

Considering the potential impacts and associated mitigation measures a summary of residual impacts is provided below.

Land Use

The Action Alternatives would result in a greater intensity of land use, greater employment, the addition of residences in the study area and/or the introduction of new entertainment oriented land uses. Land would be used more intensively for urban uses and currently underutilized land would be converted to active use with the development of buildings with greater height and bulk. Under the action alternatives the overall land use pattern of the study area would change especially with the introduction of multifamily or entertainment oriented uses.

Light and Glare

The Action Alternatives would result in increased light and glare as a consequence of new buildings, new and larger signs, increased vehicular traffic, and/or the introduction of new entertainment-oriented land uses. Land would be used more intensively for urban oriented uses and currently underutilized land would be converted to active use with an associated increase in light and glare generation normally associated with more intense redevelopment. Under the action alternatives the overall production of light and glare in the study area would change, especially with the introduction of multifamily or entertainment oriented uses.

Transportation

Implementation of Alternative 2 or Alternative 3 would result in increased traffic in the study area. Forecasts of future traffic operations on the proposed transportation network show that Aurora Square CRA would meet concurrency standards for intersection LOS and roadway volume-to-capacity ratios. The proposed transportation improvements on Westminster Way N, N 155th Street and N 160th Street associated with the two action alternatives would result in temporary impacts during the construction of these facilities.

Stormwater

Given the extensive development already in the study area and associated adverse impacts to surface waters from existing untreated runoff, it is expected that mitigation measures associated with redevelopment with either of the action alternatives would lead to an overall improvement of stormwater runoff quality from the study area. The No Action Alternative, with its minimal construction activity and no added impervious surface, would have no unavoidable adverse impacts from stormwater runoff. Under all alternatives, onsite flow control or downstream regional flow control facilities would be needed to meet City standards; offsite regional flow control would have cumulative benefits to the CRA study area, Shoreline Community College properties, and other development properties along Aurora Avenue N, which would have the ability to utilize LID practices.

Sewer and Water

While future development will increase demand for sewer and water services in the study area, the application of mitigation measures in the form of infrastructure improvements are sufficient to assure adequate facilities at the time of development. No significant unavoidable adverse impacts to sewer or water service are anticipated.

Schools and Parks

Future population and employment growth in the study area will continue to increase demand for parks and school public services on a local level. With application of mitigation measures no significant unavoidable adverse impacts are anticipated.

2.0 ALTERNATIVES

This Chapter provides a description of the proposal and alternatives compared and evaluated in this Draft Environmental Impact Statement (Draft EIS).

2.1 Introduction

In 2012, the City of Shoreline (City) designated the Aurora Square Community Renewal Area (Aurora Square CRA), and subsequently adopted the Aurora Square Community Area (CRA) Renewal Plan to guide the renewal of the Aurora Square CRA. The Aurora Square CRA is about 70 gross acres in size, and the intent is for it to redevelop as a revitalized shopping center with private mixed use commercial and residential development, entertainment, and gathering spaces.

One of the mechanisms the City proposes to use to spur private development includes a Planned Action Ordinance based on this EIS. A Planned Action provides more detailed environmental analysis during formulation of planning proposals rather than at the project permit review stage. The basic steps in designating a Planned Action are to prepare an EIS, designate the Planned Action area and projects by ordinance, and review permit applications for consistency with the ordinance (see RCW 43.21C.440 and WAC 197-11-164 to 172).

The proposed Planned Action Ordinance will be based on the Aurora Square CRA Renewal Plan, which under SEPA Rules constitutes a phased conceptual master plan that implements current zoning. The City is anticipated to approve a Planned Action Ordinance identifying thresholds of development and mitigation measures. The CRA Planned Action will also consider:

- transportation facilities for transit, pedestrian, and bicycles to support redevelopment;
- identifying opportunities for better pedestrian access to and from the CRA;
- opportunities and incentives for low-impact and eco-district[3] improvements;
- conceptual exploration of regional stormwater facilities and standard requirements;
- providing exceptional signage and way finding for the site (including sign code amendments); and
- creating “windows” to the site that will allow better interaction between pedestrians and businesses.

2.2 Background

Study Area

The study area is approximately 70 gross acres in size and located at the intersection of N 155th Street and Aurora Ave N. A study area map is provided below in Figure 2-1. The site is bounded by N 160th Street to the north, Aurora Avenue N to the east, Westminster Way, Fremont Avenue N and N 155th Street to the South, and Dayton Avenue N to the west.

[3] The CRA describes the eco-district as follows: “Exceptional environmental wins are achieved when clusters of buildings work together to achieve sustainability in a ‘eco-district.’ The Aurora Square CRA provides sufficient size to experience economies of scale with cost-effective facilities and infrastructure, whether they be treating storm or waste water, providing clean power, or achieving other environmental goals.

Figure 2-1. Study Area: Aurora Square Community Renewal Area

Source: City of Shoreline 2013

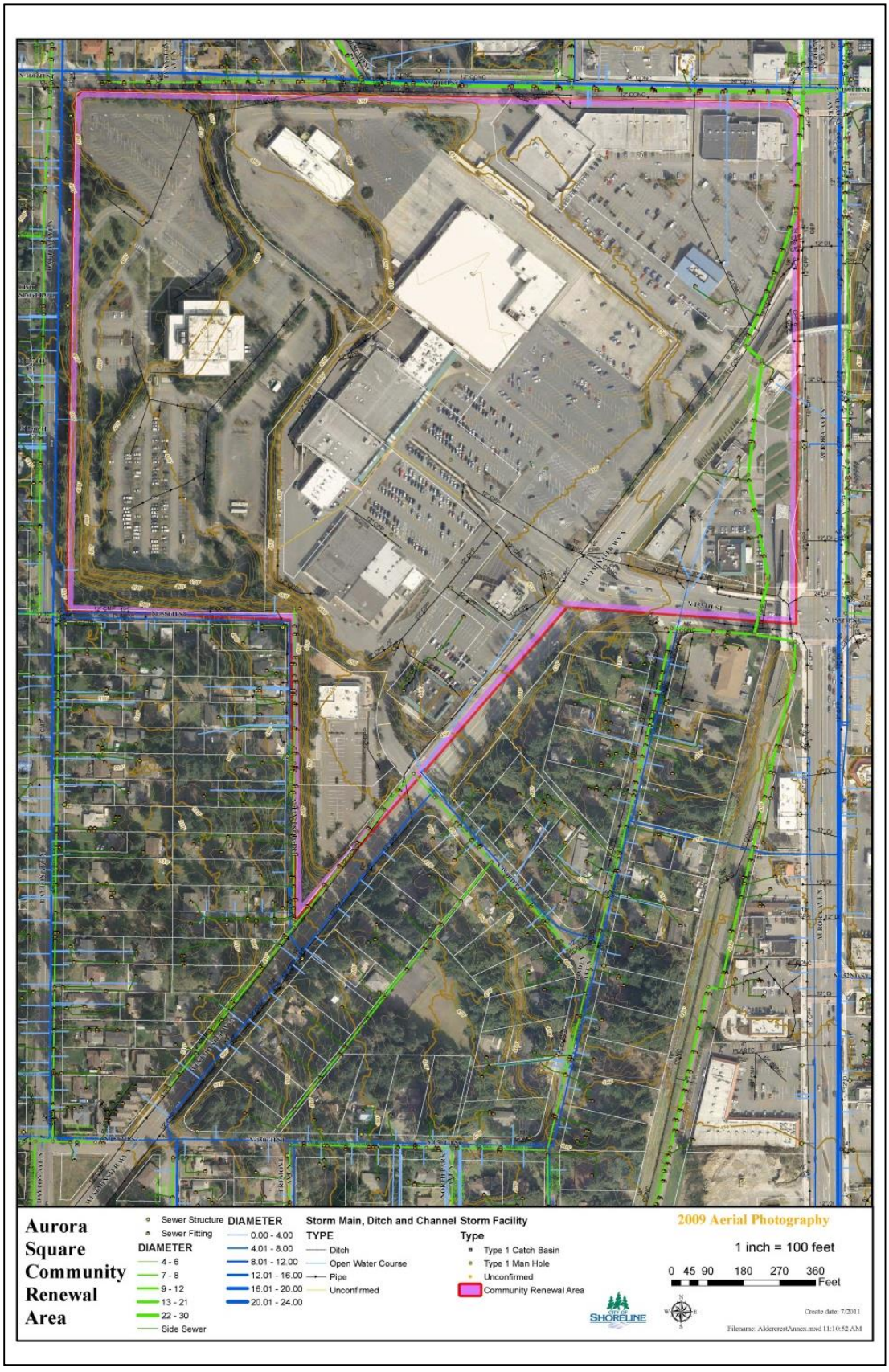
Current Conditions

Most of the study area is in commercial use with a shopping center and surface parking. The western portion of the site contains offices of the Washington State Department of Transportation (WSDOT). There are 16 parcels owned by a number of persons and corporations. See Figure 2-2 and Figure 2-3.

Surrounding uses include multifamily to the north, commercial to the north and east, and single family residential to the south and west.

The property is designated Mixed Use 1 in the Comprehensive Plan, and zoned Mixed Business (MB). The MB zone is intended "to encourage the development of vertical and/or horizontal mixed-use buildings or developments along the Aurora Avenue and Ballinger Way corridors" (SMC 20.40.040.C).

Figure 2-2. Study Area: Current Development and Topography



Source: City of Shoreline 2013

Figure 2-3. Current Site Photos: Commercial Areas Facing West (upper) and South (lower)

Source: BERK Consulting 2014

2.3 Public Comment Opportunities

The City provided comment opportunities with a Determination of Significance and Scoping Notice issued August 14, 2014, for a 21-day comment period that closed on September 4, 2014 (see Appendix A). The Draft EIS is being issued with a 30-day comment period during which time written comments are being requested (see Fact Sheet). Following the Draft EIS issuance, the Final EIS will respond to public comments.

Public meetings and hearings on the Planned Action Ordinance and other code amendments (e.g. signs) will receive legislative review by the Planning Commission and City Council. Project related meetings and

comment periods are advertised at the project webpage: http://www.cityofshoreline.com/business/aurora-square-community-renewal-area.

2.4 Proposal Objectives

SEPA requires a statement of proposal objectives to guide the formulation of alternatives and their evaluation. The Aurora Square Planned Action objectives are consistent with the Aurora Square CRA Vision:

> *Imagine an open, green plaza in the center of Shoreline, filled with sunbathing and studying students, young families watching their children run and play, an elderly couple enjoying a Central Market picnic, dogs wagging their tails, actors practicing their lines, and the sound of college-age buskers singing with an occasional clink as coins fall into a hat.*
>
> *This is the backdrop to the busy comings and goings of shoppers and lunching workers who relish the time of their day that allows them to visit the renewed Aurora Square shopping center. It is a "one-stop" convenient shopping solution that provides dining, nightlife, and healthy-lifestyle options. It is a community gathering place, where a leg stretching walking easily turns into a serendipitous rendezvous with friends.*
>
> *It is an environmentally sensitive district within walking distance of Metro's Rapid- Ride bus service and the Interurban Trail: the intersection of life, study, entertainment, sustainability and retail.*

The vision is illustrated in the conceptual diagram in Figure 2-4, showing where added retail, office, residential, and entertainment development could occur. There are a variety of ways the current Comprehensive Plan and Zoning could be implemented to achieve an urban, mixed use, entertainment district character.

Figure 2-4.Example Aurora Square Development Concept

Source: City of Shoreline 2013

The vision is to be implemented by public and private investments. Some of the City investments proposed in the CRA Plan include the following – comments about how each strategy is addressed in the Planned Action EIS follows each bullet:

1. Analyze and account for environmental impacts of major redevelopment through a Planned Action or similar legislation which would allow future investors to eliminate the need for project-specific environmental review.

   This action item is addressed through the preparation of this EIS.

2. Conduct a traffic analysis to determine how best to improve circulation on site.

   This action item is addressed through the preparation of this EIS.

3. Establish a special overlay district that allows for special rules to encourage the creation of an entertainment district.

   The likely code amendments would address onsite and offsite changeable message signs advertising businesses at the center, and noise allowances for concerts and other special events.

4. Explore how to encourage eco-district and low-impact development practices that can be cost-effectively implemented in the Aurora Square CRA.

   The EIS reviews conceptual stormwater management approaches including a regional facilities and onsite standards. The City would encourage heat exchange from in-building sewer and water infrastructure in private development; a cost effective scale of development would be allowed through redevelopment under the present zoning code.

5. Re-brand Aurora Square and construct iconic signage for Aurora Square and Shoreline Community College.

   The EIS reviews potential amendments to the Shoreline sign regulations to achieve this strategy.

6. Create developer agreements for public-private partnership projects in order to establish and promote the City's available resources.

   This is a strategy that would be implemented over time with willing landowners. The City would follow the requirements for such agreements in its municipal code and state law which generally require development agreements to be consistent with City plans and development regulations.

7. Negotiate a contract for the construction of a world-class sound stage that brings jobs, offers employment opportunities, and generates positive activity.

   This strategy supports the entertainment district and is a future capital investment addressed conceptually through the land uses studied in this EIS.

8. Place applicable Renewal Projects into the City's Capital Improvement Budget, Traffic Mitigation Plan, Budget, and Comprehensive Plan, and seek grants for infrastructure improvements in and around the CRA, especially for the improvement of N 160th Street.

   The EIS analyzes potential transportation and stormwater improvements and mitigation measures that could be formulated into capital projects as part of the City's Comprehensive Plan and Budget.

Some activities would be invested in and incentivized by the City and implemented together with willing land owners and partners such as Shoreline Community College. These public and private activities include: adaptive reuse of buildings and redevelopment with commercial/residential uses, transportation improvements, eco-district and low impact development, and educational and entertainment venues.

2.5 Alternatives Description

Overview

Three alternatives are under review in this Draft EIS:

- **No Action**, a SEPA Required Alternative. This alternative assumes Aurora Square continues with a similar commercial retail and office character and the same square footage of buildings and parking as presently located on site.
- **Phased Growth**, assuming a moderate level of development, which introduces 500 dwelling units and adds up to 250,000 square feet of retail and office space beyond present development space.
- **Planned Growth**, a maximum level of growth studied, adding 1,000 dwelling units and 500,000 square feet of retail and office space beyond present development space.

Each alternative is addressed below.

Alternative 1: No Action

Under Alternative 1, the No Action Alternative, the property would continue with retail and office uses. Mixed residential and commercial uses, though allowed by the Shoreline Municipal Code, would not occur. Present suburban style development with low floor area ratios (FARs)[4] would continue. Businesses may change within the buildings but would continue to focus on retail and office uses similar to the current mix. See Table 2-1 for a summary of the current building space and lot area at Aurora Square.

With Alternative 1 No Action, a Planned Action Ordinance would not be adopted, and sign code and noise regulation amendments would not be made. The No Action Alternative is consistent with the transportation projects identified in the City's *2014-2019 Transportation Improvement Plan* and *Transportation Master Plan*, but only assumes completion of improvements funded by the *2015-2020 Capital Improvement Plan*. The No Action Alternative includes the restriping N 160th Street from four to three lanes between Aurora Avenue N and Greenwood Avenue N in 2015.

Stormwater improvements would follow the City's design standards. Offsite regional facilities would not be provided.

Table 2-1. Current Aurora Square Development and Lot Area

Summary Use	Building Square Feet	Lot Area Square Feet	Floor Area Ratio
Office / Educational Space	143,386	777,484	0.18
Retail Space	439,339	1,605,541	0.27
Total	582,725	2,383,025	0.24

Source: King County Assessor 2014; BERK Consulting 2014

The No Action Alternative is a benchmark from which the other action alternatives can be compared.

Alternative 2: Phased Growth

Under Alternative 2, residential development would be introduced at up to 500 dwelling units. Also, approximately 250,000 square feet of commercial retail or office development would be added to the site. Together the added space would result in a mixed use environment and increased shopping and professional space. The FAR would increase to 0.6, more than doubling the intensity on the site. To

[4] The gross floor area of all buildings or structures on a lot divided by the total lot area. (SMC 20.20.020)

achieve this, more parking would be structured and the expanse of surface parking would be reduced in favor of building space.

To incentivize this additional growth at Aurora Square a Planned Action Ordinance would be adopted which would mean additional SEPA review would not be required, and mitigation measures would be known in advance of the development application.

Sign code amendments would be made which could increase the area and height of signs to increase visibility and create a new brand for the center to help achieve the CRA strategy of: "Re-brand Aurora Square and construct iconic signage for Aurora Square and Shoreline Community College."

Noise regulations would be amended to allow for concerts or events after 10:30 pm.

Proposed sign code amendments would reinforce Aurora Square as a destination retail and entertainment center and would:

- Allow signage offsite such as in or adjacent to the SR 99 right of way subject to City standards and applicable state requirements
- Allow changeable message signs including animation (e.g. University Village or Everett Mall examples) to advertise businesses and to attract movie goers
- Increase signage area, e.g. allowable area for freestanding and building signs would be increased
- Allow sign structures to be no higher than the height of buildings allowed by the zoning code
- Allow neon lighting
- Apply design guidelines for signs to reinforce the entertainment district as well as the City's desired street character for Aurora Avenue N

Street improvements would be made to support multiple modes, improved access, and urban street characters that support a mixed use environment. Stormwater would be provided either onsite or preferably in a regional facility. Amendments to Shoreline's Capital Facility Element and Capital Improvement Program to fold in transportation and stormwater improvements would also be considered.

This alternative is considered "phased" since it would not fully realize the development potential of the site, but would create a catalytic mixed use redevelopment that sets the stage for full transformation in Alternative 3. Alternative 2 allows the City to test potential redevelopment impacts and mitigation needs (e.g. transportation and stormwater) at a moderate level of growth.

Alternative 3: Planned Growth

Alternative 3 would be similar to Alternative 2 except that 1,000 dwelling units and 500,000 square feet of commercial retail and office space would be added. This level of additional growth would increase the FAR to be more urban in character at 0.9.

As with Alternative 2, a Planned Action Ordinance and sign code and noise regulation amendments would be adopted as part of Alternative 3 to help stimulate growth. Further, multimodal transportation improvements and the option to consider onsite or offsite regional stormwater would be made as per Alternative 2.

Comparison of Alternative Growth Levels

Adding the proposed commercial space to the present space and assuming 800-1,000 square feet per dwelling unit on average, the range of total building space and FAR is presented in Table 2-2.

Table 2-2. Comparison of Alternative Building Space and Floor Area Ratio

Alternative	Projected Building Square Feet	Lot Area Square Feet	FAR
Alternative 1	582,725	2,383,025	0.2
Alternative 2	1,332,725	2,383,025	0.6
Alternative 3	2,082,725	2,383,025	0.9

Source: King County Assessor 2014; BERK Consulting 2014

Transportation Improvements

Each alternative includes improvements to sidewalks and pedestrian facilities that will promote use of non-motorized travel and provide better connections to transit.

The No Action Alternative is consistent with the transportation projects identified in the City's *2014-2019 Transportation Improvement Plan* and *Transportation Master Plan*, but only assumes completion of improvements funded by the *2015-2020 Capital Improvement Plan*. The No Action Alternative includes the restriping N 160th Street from four to three lanes between Aurora Avenue N and Greenwood Avenue N in 2015.

Transportation improvements are needed to serve the Aurora Square study area and to encourage the economic renewal of the Aurora Square CRA. Alternatives 2 and 3 include additional improvements to Westminster Way N and the N 155th Street/Westminster Way N intersection. Based on the mix of land uses in the study area and the area's 2030 traffic volumes, preliminary designs were developed for each corridor showing proposed changes to lane channelization and the location of sidewalks and bicycle facilities. The improvements are the same for Alternatives 2 and 3. The specific projects include:

- **N 160th Street between Dayton Avenue N and Aurora Avenue N**. The planned improvements include three travel lanes, sidewalks, and a two-way cycle track facility on the south side of the street.
- **Westminster Way N between N 155th Street and Aurora Avenue N.** The planned improvements would reconfigure this segment of Westminster Way N to a 2-lane roadway with sidewalks and on-street parking for adjacent land uses. The south segment of Westminster Way N would be parallel parking and the north segment would be angled parking.
- **Westminster Way N between Fremont Avenue N and N 155th Street.** This segment of Westminster Way N would remain a 4-5 lane facility. Frontage improvements would include improved sidewalks and revised intersection and roadway channelization.
- **N 155th Street between Westminster Way N and Aurora Avenue N**. Frontage improvements would include improved sidewalks and revised intersection and roadway channelization.
- **Aurora Avenue N between N 160th Street and Westminster Way N**. Add a two-way bicycle facility behind the existing sidewalk along Aurora Avenue N to connect the Interurban Trail to the planned cycle track on N 160th Street.
- **Improvements to Aurora Square study area access.** This would include:
    - Close the southbound Aurora Avenue N right-turn "slip lane" to Westminster Way N and construct a new roadway connection at N 156th Street/Aurora Avenue N that would connect Westminster Way N and Aurora Avenue N. This access would be limited to southbound right turns inbound and eastbound right turns outbound.

- Construct a new intersection along N 160th Street to provide access to the CRA. Preliminary CRA plans include a new north/south internal street that will form the primary connection between Westminster Way N and N 160th Street. The design of this north/south internal street would determine the location of the new intersection and its relationship to the intersections at Fremont Avenue N and Linden Avenue N. The redeveloping CRA properties may be required to construct a signal at the new intersection if signal warrants are met per the Manual for Uniform Traffic Control Devices.

Preliminary transportation improvement concepts have been preliminarily developed and are included in Appendix B.

Regional Stormwater

Each development proposal will be required by City of Shoreline code to comply with the current version of the Department of Ecology's Stormwater Management Manual for Western Washington. The current version of this manual was published in 2012 and includes requirements to incorporate LID techniques, facilities to treat runoff from pollution-generating impervious surfaces, and flow control facilities.

Of these three stormwater management components, it is anticipated that flow control will be the most costly to implement, because current standards require retrofitting both new and replaced impervious surfaces on development sites so that rates of runoff mimic those of a pre-development, forested condition. In areas such as the study area that, due to underlying soil conditions, are not expected to have significant capacity to infiltrate stormwater, this level of flow control is typically accomplished using detention facilities such as open ponds or underground tanks or vaults. With the high intensity of land use that would accompany either of the two action alternatives, underground concrete vaults would be the most likely method used for flow control.

With flow control being a significant cost that could have the effect of discouraging the type of redevelopment described in the action alternatives, the City has begun to explore regional flow control options that could be achieved at a lower cost while providing an equivalent or greater flow control benefit. Two regional flow control options are currently being explored, both of which are located on Shoreline Community College (SCC) property in the vicinity of the College's Greenwood parking lot and the City's M1 Dam regional detention facility (see Section 3.4 for locations and analysis). See also Appendix C for a Stormwater Concept Report.

Future Alternatives

Following the Draft EIS publication and review of comments, the City may define a preferred alternative in the range of the Draft EIS analysis, or continue to advance the range of alternatives from the Draft EIS. The preferred alternative may combine elements of one or more alternatives or identify a particular amount or mix of growth.

2.6 Planned Action Ordinance

A planned action provides more detailed environmental analysis during the early formulation stages of planning proposals rather than at the project permit review stage. Future development proposals consistent with the planned action ordinance do not have to undergo an environmental threshold determination, and are not subject to SEPA appeals when consistent with the planned action ordinance including specified mitigation measures. Planned actions still need to meet the City's development regulations and to obtain necessary permits.

According to the SEPA law and rules, a planned action is defined as a project that has the following characteristics:

1. *Is designated a planned action by ordinance or resolution adopted by a GMA county/city;*

2. *Has had significant environmental impacts addressed in an EIS, though some analysis can be deferred at the project level pursuant to certain criteria specified in the law;*
3. *Has been prepared in conjunction with a comprehensive plan, subarea plan, a fully contained community, a master planned resort, master planned development, a phased project, or in conjunction with subsequent / implementing projects;*
4. *Is located within an urban growth area;*
5. *Is not an essential public facility, as defined in RCW 12.36.70A.200, unless an essential public facility is accessory to or part of a residential, office, school, commercial, recreational, service, or industrial development that is designated a planned action; and*
6. *Is consistent with a comprehensive plan or subarea plan adopted under GMA.*

The jurisdiction must include a definition of the types of development included, but has options to limit the boundaries and to establish a time period during which the planned action will be effective.

Review of a planned action is intended to be simpler and more focused than for other projects. If the PAO is adopted, the City would follow the applicable procedures contained in the ordinance to determine if the proposed project impacts are consistent with the EIS. When a permit application and environmental checklist are submitted for a project that is being proposed as a planned action project, the City must first verify the following:

- The project meets the description of any project(s) designated as a planned action by ordinance or resolution.
- The probable significant adverse environmental impacts were adequately addressed in the EIS.
- The project includes any conditions or mitigation measures outlined in the ordinance or resolution.

If the project meets the above requirements, the project qualifies as a planned action project and a SEPA threshold determination is not required. However, City actions (i.e., the permit process) are still applicable.

Appendix D contains a draft of the PAO applicable to Alternatives 2 and 3 including the information on the draft process and the parameters used to determine consistency with EIS assumptions.

2.7 Municipal Code Amendments

Sign Code

Shoreline proposes to amend its sign code to attract residents and visitors to the mixed use entertainment district. Table 2-3 and Table 2-4 below shows the existing and proposed sign changes. A property may use a combination of the types of signs listed below.

A concept for a changeable message sign is also provided in Figure 2-5.

Table 2-3. Current and Proposed Sign Code Criteria for Aurora Square CRA

	Current Code (MB Zone)	Proposed Code (Aurora Square CRA)
Monument Signs		
Maximum Area per Sign Face	100 square feet	100 square feet
Maximum Height	12 feet	12 feet
Maximum Number Permitted	▪ 1 per street frontage - or - ▪ Two per street frontage if the frontage is greater than 250 feet. and each sign is minimally 150 feet. apart from other signs on same property.	Monument signs are for way-finding only. No individual business or tenant to be allowed on monument signage except as placement on tenant panels within the way-finding system.
Illumination	Permitted	Permitted
Building Mounted Signs		
Maximum Sign Area	▪ 50 square feet (Each tenant) ▪ 10 square feet (Building Directory) ▪ 25 square feet (Building Name Sign)	15% of building fascia with a maximum of 500 square feet
Maximum Height	Not to extend above the building parapet, soffit, or eave line of the roof. If perpendicular to building then 9-foot clearance above walkway.	Not to project above the roof line
Number Permitted	1 per business per facade facing street frontage or parking lot.	Allowed Sign Area may be broken down into multiple signs, provided the aggregate area remains equal or less than 15%.
Illumination	Permitted	Permitted
Under-Awning Signs		
Maximum Sign Area	12 square feet	12 square feet
Maximum Clearance from Grade	9 feet	9 feet
Maximum Height (feet)	Not to extend above or beyond awning, canopy, or other overhanging feature of a building under which the sign is suspended	Not to extend above or beyond awning, canopy, or other overhanging feature of a building under which the sign is suspended
Number Permitted	1 per business per facade facing street frontage or parking lot.	1 per business entrance or frontage
Illumination	Permitted	Permitted
Driveway Entrance/Exit		
Maximum Sign Area	8 square feet	Not Applicable to Aurora Square CRA.
Maximum Height	48 inches	
Number Permitted	1 per driveway	
Illumination	Permitted	

Source: SMC 20.50.540(G); City of Shoreline, 2014

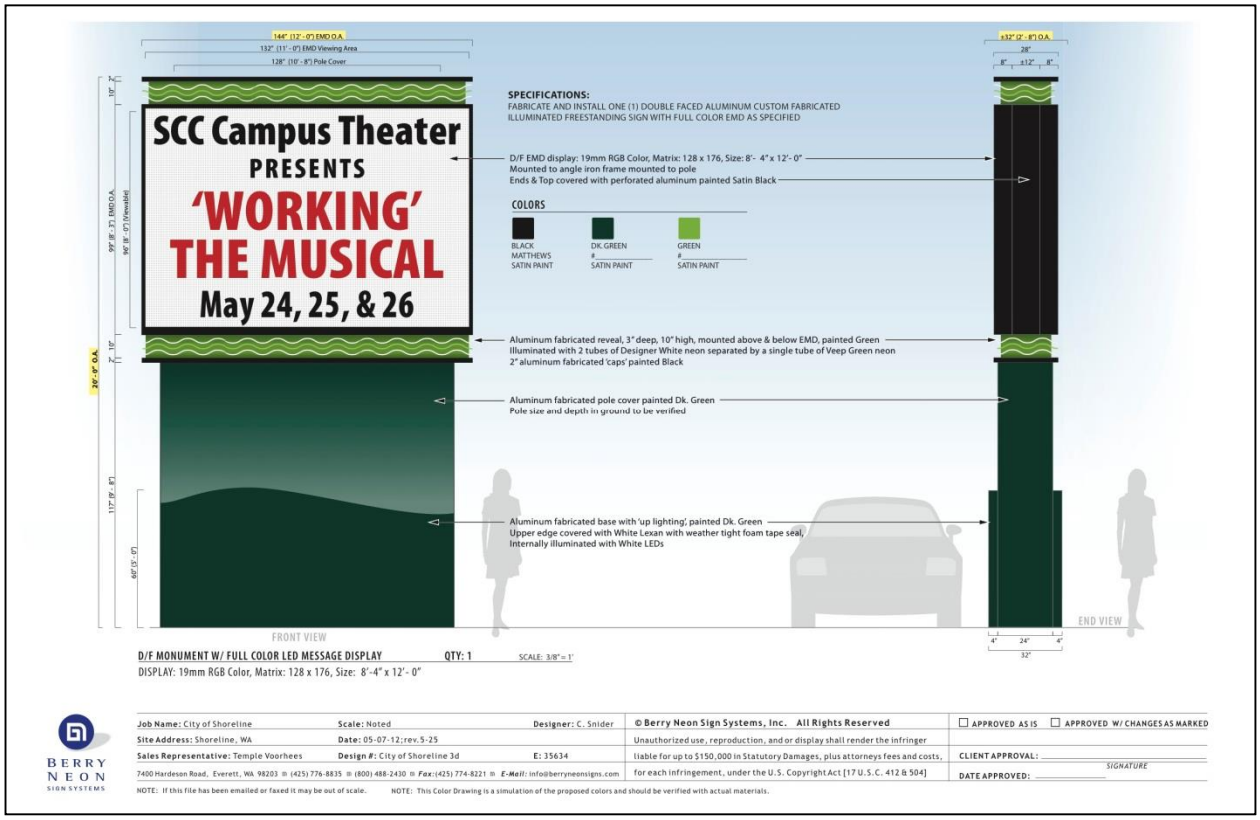
Table 2-4. Additional Sign Code Criteria for Aurora Square Overlay

Additional Sign Criteria for Aurora Square Overlay	
Projecting Signs	
Maximum Sign Area	10% of a tenant's allotted wall sign area may be utilized for one or more projecting signs.
Maximum Height	Not to exceed the highest point of the building to which it is attached.
Number Permitted	One (1) projecting sign per tenant, per fascia.
Illumination	Required
Pylon Signs	
Maximum Sign Area	300 square feet
Maximum Height	25 feet
Number Permitted	Aurora Square CRA is permitted up to three (3) pylon signs.
Illumination	Required
Miscellaneous	
Neon and LED	Visible neon tubing is permitted as a sign element within the Aurora Square CRA Overlay District. Visible neon or LED outline lighting is also permitted.
Electronic Messaging	Electronic Messaging signage is allowed only on Pylon Signs.
Definition of On-site Signage	The Aurora Square Overlay District is comprised of the entire area -- including right-of-way--that was designated as the Aurora Square Community Renewal Area. For establishments located within the Aurora Square Overlay District, any signage located within the Aurora Square Overlay District is considered "on-site."
Movie and Event Advertising	Temporary banners of any size are permitted for advertising movies or events within the Aurora Square Overlay District.

Source: City of Shoreline, 2014

The proposed amendments to the sign code would be specific to the Aurora Square CRA and function as an overlay. There would be larger sizes allowed of building mounted signs, additional projecting and pylon sigs, and electronic messaging and other forms of illumination allowed consistent with an entertainment district atmosphere.

Figure 2-5. Example Conceptual Changeable Message Sign



Source: Berry Neon 2014

Noise Standards – Entertainment District Overlay

Under Alternatives 2 and 3, the City would amend its noise regulations in SMC Chapter 9.05 to allow concerts and other entertainment to occur after 10:30 pm, extending to 11 pm Sunday through Thursday and midnight on Friday and Saturday.

2.8 Benefits and Disadvantages of Delaying Proposed Action

As described in the Community Renewal Plan, the Aurora Square is considered economically blighted.

> *"On September 4, 2012, the Shoreline City Council designated Aurora Square as a Community Renewal Area after finding that it qualified as economically blighted according to most of the qualifying conditions defined in RCW 35.81: old, obsolete buildings, defective or inadequate street layout, faulty lot layout, excessive land coverage, diversity of ownership, and connectivity problems."*

Delay of the proposed action would continue present built environment conditions, delay transition to a mixed use character, delay multimodal transportation and circulation improvements onsite and offsite, and delay improvement to stormwater quality through redevelopment. Delay of the proposed action would mean less potential for light and glare emanating from new signage and more intensive buildings. Special events and concerts would not occur and the present noise standards would not change.

3.0 AFFECTED ENVIRONMENT, SIGNIFICANT IMPACTS, AND MITIGATION MEASURES

3.1 Land Use

This section addresses current and proposed land uses within the Aurora Square study area.

Affected Environment

Current Land Uses – Aurora Square CRA

This section describes the existing land use patterns and zoning within the Aurora Square. Uses include an array of commercial, retail, and mixed uses. The CRA is comprised of 16 parcels and occupies a 70-acre site across a sloping topography, including parcels and abutting rights of way. The map in Figure 3-1 shows the present use of tax parcels; land use component areas and year built are illustrated in Figure 3-2.

Table 3-1 gives the acreage breakdown by present use for the CRA study area.

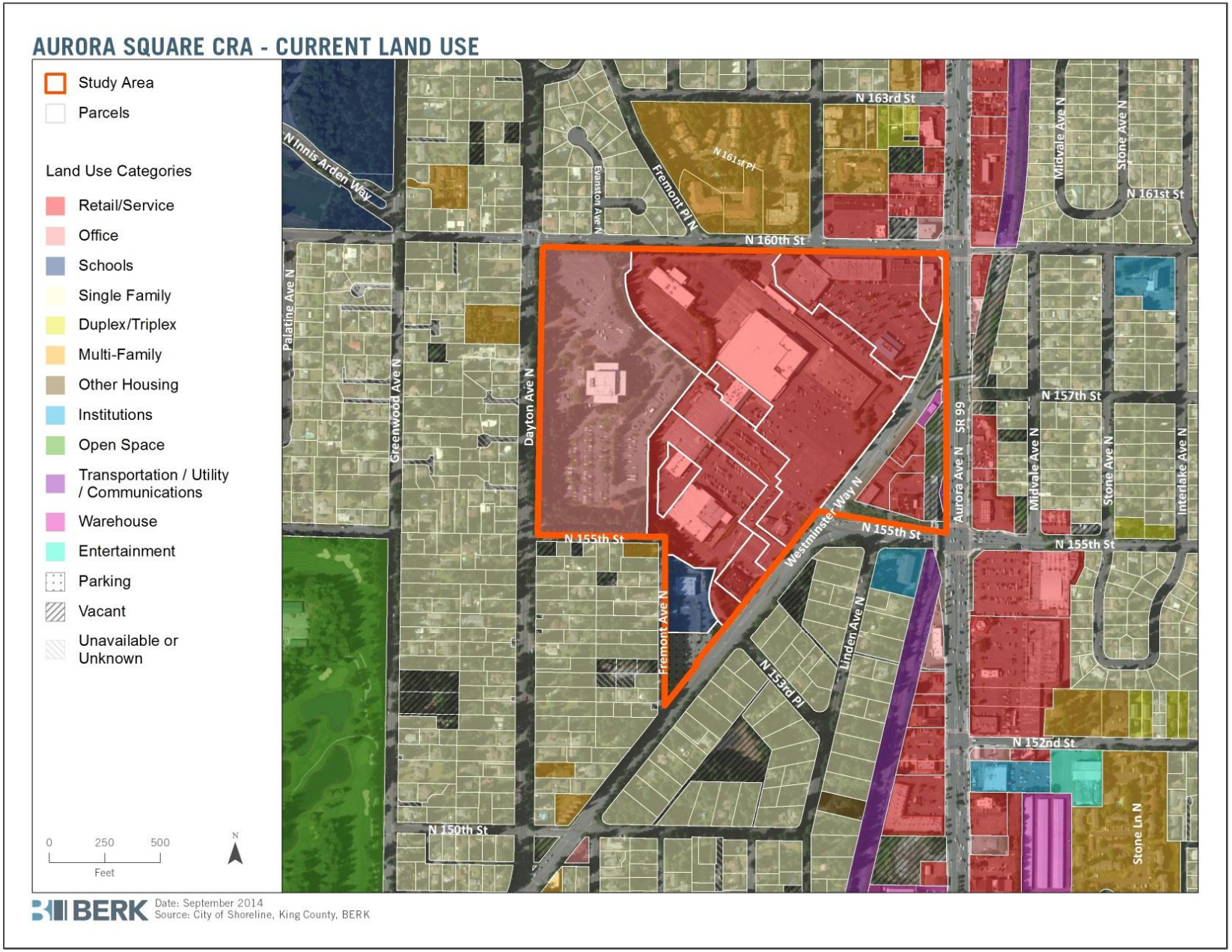
Table 3-1. Percent Present Use within Aurora Square CRA

Present Use Categories	Acres	Percent
Commercial/Mixed-Use	**52.4**	**74.8%**
Shopping Center (Major Retail)	17.2	32.9%
Office Building	15.2	29.0%
Retail Store	7.7	14.7%
Shopping Center (Neighborhood)	5.7	10.9%
Grocery Store	2.9	5.6%
Restaurant/Lounge	1.6	3.0%
Parking (Assoc)	1.0	1.9%
Retail (Line/Strip)	0.6	1.2%
Restaurant (Fast Food)	0.4	0.7%
Major Institution And Public Facilities/Utilities	**1.6**	**2.3%**
School (Private)	1.5	93.1%
Utility, Public	0.1	6.9%
Vacant	**1.0**	**1.4%**
Vacant (Commercial)	1.0	100.0%
Industrial	**0.2**	**0.2%**
Warehouse	0.2	100.0%
Right-of-Way	**14.8**	**21.1%**
Right-of-Way	14.8	100.0%
Total	**70.0**	**100.0%**

Source: King County Assessor 2014; BERK Consulting 2014

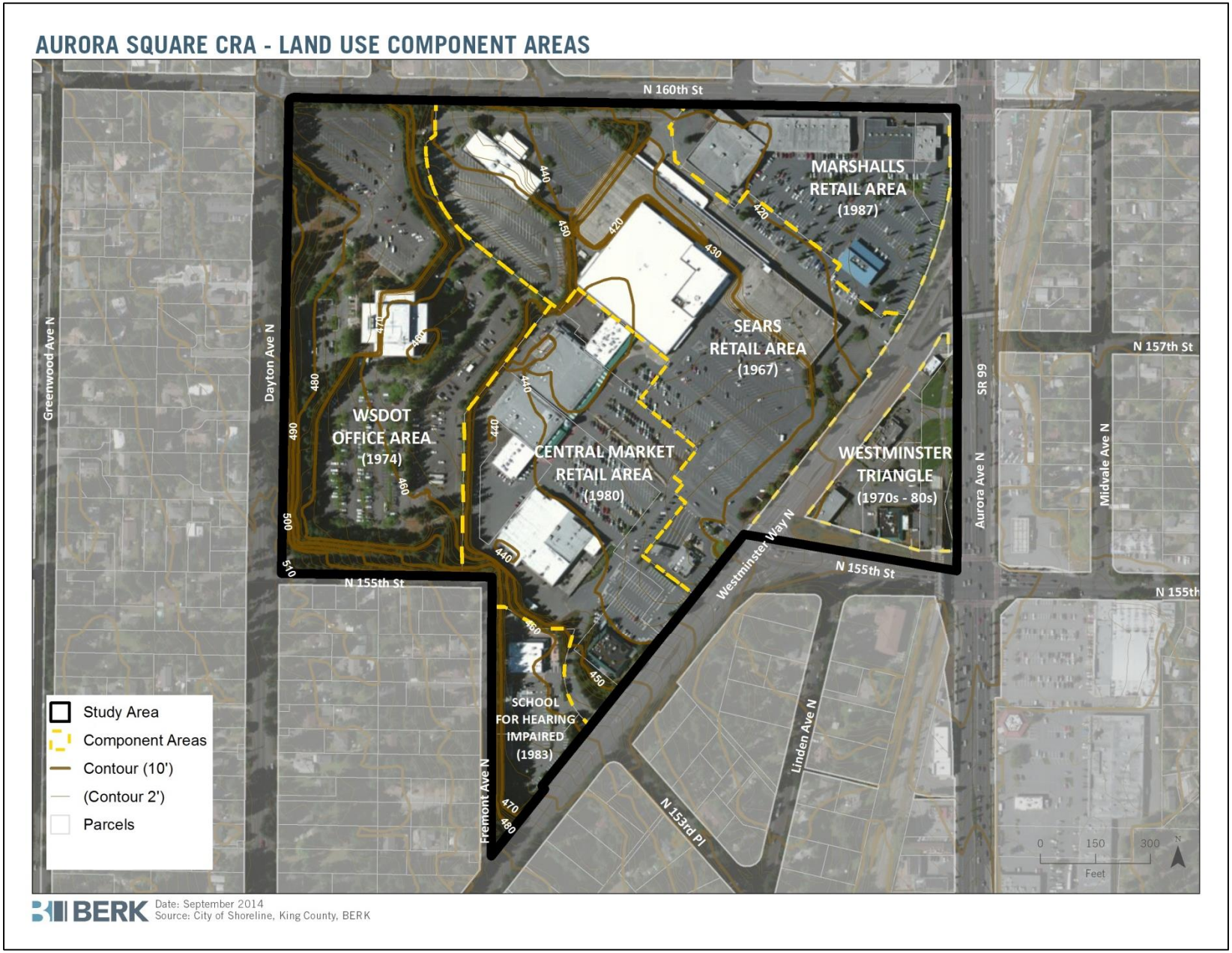
The current CRA site is a commercial, retail, and office space developed in phases between 1967 and 1988. Topographically the site descends over 80 feet in elevation from over 500 feet at its western and southwest edges to less than 420 feet at its eastern and northeastern ends. Both the separate and periodic approach to development over time as well the site topography have informed the current array of component land use areas that function relatively independent of one another as shown in Figure 3-2.

Figure 3-1. Study Area Current Land Use



Source: City of Shoreline 2014; King County 2014; BERK Consulting 2014

Figure 3-2. Land Use Component Areas



Source: City of Shoreline 2014; King County 2014; BERK Consulting 2014

Office and retail uses are the predominant land use types on the site with approximately 95% of the property devoted to these types of land use. The main commercial and retail area is bordered by the WSDOT office site to the west, N 160th Street to the north, Aurora Avenue N to the east and Westminster Way N to the south. Within this area, there are three distinct retail nodes: Sears, Central Market retail area, and the Marshalls retail area.

The largest retail area is the Sears department store built in 1967 which diagonally extends almost fully across the CRA site. The Sears building is about 311,600 square feet in area and is between one and three stories tall. There is surface as well as roof top parking. The size and length of the Sears building acts as a physical barrier between the Marshalls retail area to the northeast and the Central Market retail area to the southwest.

The Central Market retail area is to the southwest of Sears, west of Westminster Way N and east of the WSDOT office building. This portion of the CRA contains approximately 83,000 square feet of one story commercial and retail space including Central Market Shoreline grocery, Bank of America, Tropical Tan, French Nail Salon, Sport Cigars, Super China Buffet, US Bank, and a Salvation Army retail location. This retail area was developed in 1980 and includes surface area parking.

The Marshalls retail area is comprised of three one story buildings totaling about 30,000 square feet in space. These buildings were built between 1986 and 1987. Retailers include Marshalls, Pier 1 Imports, Subway, Value Pet Clinic, Shake and Go, Yoon's Yoga Bliss, CKO Kickboxing, Value Pet Clinic, Aaron Brothers Art and Frame, and Hopelink Foodbank. This area of the CRA also contains surface parking dotted with deciduous trees.

The WSDOT office building is located on a lot west of the Central Market retail area and is bordered by N 155th Street to the south, Dayton Avenue N to the west and N 160th Street to the north. The WSDOT lot is physically separated from the adjacent retail area by a steep slope that extends nearly the length of the CRA property from north to south. The six story building contains about 134,030 square feet and sits within a surface parking lot which contains strips of deciduous and evergreen trees. Currently, WSDOT is constructing a 16,200 square feet building located immediately north and adjacent to the existing WSDOT building. The new building will house its new Traffic Management Center.

The private Northwest School for Hearing-Impaired Children is situated on the southern extent of the CRA site and is bordered by Fremont Avenue N to the west, Westminster Way N to the south and east, and by the Central Market retail area to the north. Including a garage structure, the site contains 9,400 square feet of building space and was developed in 1983. The school itself is sited on a small plateau above the adjacent retail areas.

A triangular area in the southeast corner of the CRA is flanked by Westminster Way N to the west, N 155th St to the south, and Aurora Ave N to the east. This area was developed between 1977 and 1988 and is comprised of four buildings totaling approximately 15,000 square feet. All of the buildings are currently vacant. Previous uses included Denny's restaurant, a Dairy Queen, Sherwin Williams, and a Pizza Hut. This triangular site also serves as a connecting node for the Interurban Trail via pedestrian/bike bridges passing over N 155th Street to the south and Aurora Avenue N to the east. There is surface parking on the site. Transmission wires overhead, parking, as well as the Interurban Trail are located in the Seattle City Light right-of-way immediately to the east.

Collectively, the current development on the CRA site contains a total of 582,725 square feet of building space and reflects an overall suburban style development with a low floor area ration (FAR)[5] of 0.24 as shown in Table 3-2 and illustrated in Figure 3-3 .

[5] The gross floor area of all buildings or structures on a lot divided by the total lot area (SMC 20.20.020)

Table 3-2. Current Aurora Square Development and Lot Area

Summary Use	Building Square Feet	Lot Area Square Feet	Floor Area Ratio
Office / Educational Space	143,386	777,484	0.18
Retail Space	439,339	1,605,541	0.27
Total	582,725	2,383,025	0.24

Source: King County Assessor 2014; BERK Consulting 2014

Surrounding land uses and patterns also vary by location as shown in Figure 3-1. Single family residential uses are mainly concentrated around the study area from the intersection of Fremont Place N and N 160th Street to the north and then wrapping to the west and south toward the intersection of Westminster Way N and N 155th Street. A cluster of multi-family residential buildings are located north of the site and east of the intersection of Fremont Place N and N 160th Street. Two individual, smaller multi-family developments are located respectively to the west and south of the CRA. On N 160th Street between Linden Avenue N and Aurora Avenue N there are commercial uses including restaurants, and convenience and service retail.

East of the property along Aurora Avenue N a mix of commercial and retail uses extends between the intersections of N 155th Street and N 160th Street and includes a grocery store retail complex, gas stations, used car dealerships, restaurants and a variety of small businesses. Additionally, the right-of-way that contains large utility poles, heavy transmission wires, and portions of the Interurban Trail at its southeastern edge continues north and south from the corner of N 155th Street and Aurora Avenue N. A church is located across from the CRA site on the southeast corner of N 155th Street and Linden Avenue N.

There are three additional notable land uses within a quarter mile of the CRA site. Highland Terrace Elementary School is located northwest of the site at the intersection of N 160th Street and 1st Avenue NW. Shoreline Community College is also located northwest of the CRA site and occupies a large area north of the intersection of N 160th Street and Greenwood Avenue N. The Seattle Golf and Country Club is located southwest of the CRA site.

Figure 3-3. Site Photos

View of Central Market , Near Westminster Way N Entrance	View of Sears, Near N 160th St Entrance	WSDOT Office Building, North of N 155th St
		
Northwest School for Hearing-Impaired Children, North of Westminster Way N	**View of Strip Mall on Site near Marshalls, Southwest Corner of N 160th St and Aurora Ave N**	**View of Denny's Restaurant, N 155th St and Aurora Avenue N**
		

Source: BERK Consulting 2014; Google Earth 2014

Planned Land Uses

The Shoreline Comprehensive Plan generally directs future land use over the long term. The Comprehensive Plan land use map designates the majority of the CRA property as Mixed-Use 1 (MU1) with a small portion of the property designated as Public Facilities (PF) reflecting the utility right of way north of N 155th Street and adjacent to Aurora Avenue N. The map is in Figure 3-4 shows the current Comprehensive Plan land use designations both within and around the study area.

The City's Comprehensive Plan's Land Use Element defines the MU1 designation as one that "encourages the development of walkable places with architectural interest that integrate a wide variety of retail, office, and service uses, along with form-based maximum density residential uses. Transition to adjacent single-family neighborhoods may be accomplished through appropriate design solutions. Limited manufacturing uses may be permitted under certain conditions." The Plan states that the Public Facilities land use designation "applies to a number of current or proposed facilities within the community. If the use becomes discontinued, underlying zoning shall remain unless adjusted by a formal amendment." The MU1 and PF designations respectively represent 98% and 2% of the CRA study area excluding street right of ways.

Under Countywide Planning Policies (2012), the City is to provide capacity for 5,000 dwelling units and 5,000 jobs and its zoned capacity is more than sufficient to provide for the growth. The City's assumptions for the spread of the 5,000 dwellings and 5,000 jobs assumed about 373 dwelling units and 2,078 jobs at Aurora Square.

Zoning

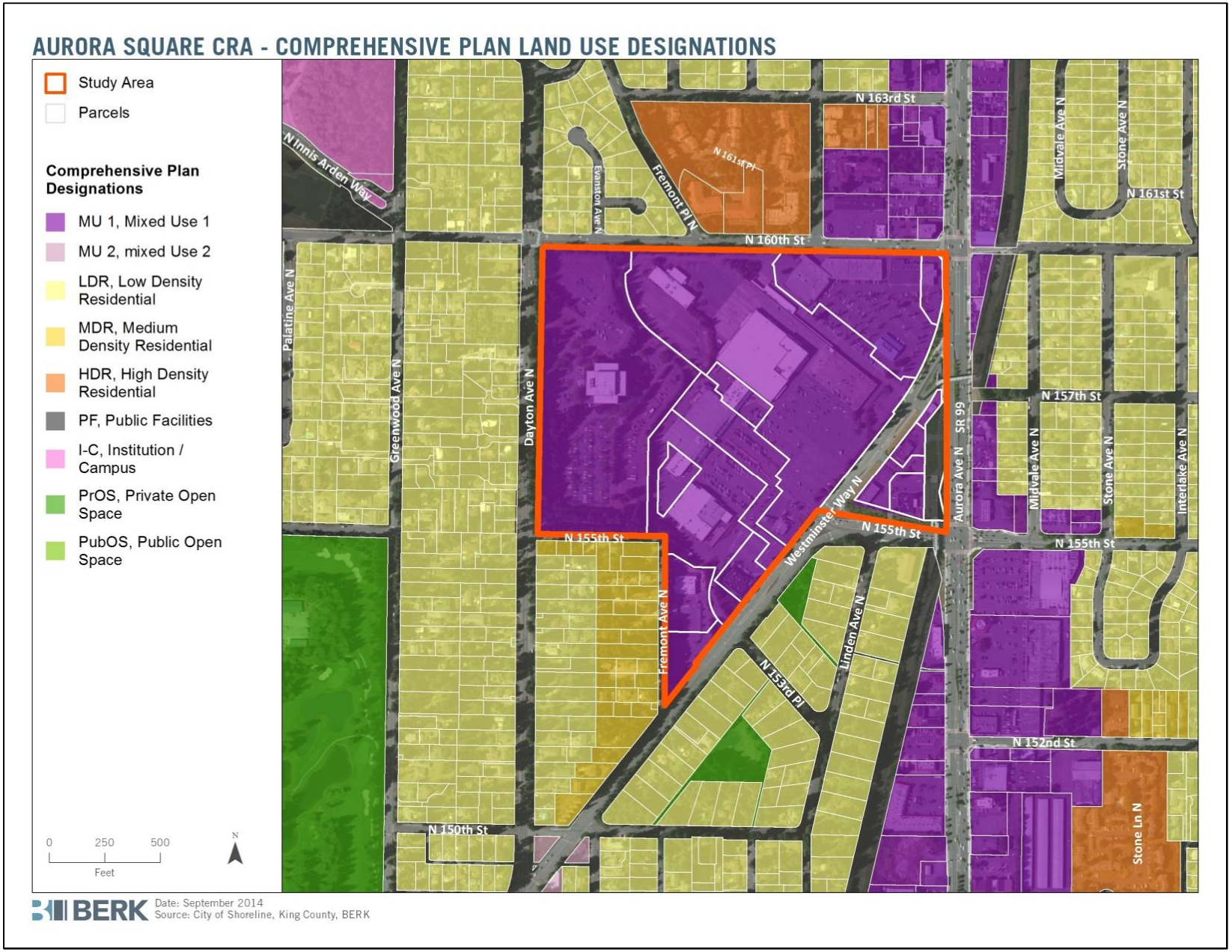
The City of Shoreline's zoning reflects the planned and allowed uses with the study area and implements the City's Comprehensive Plan. Figure 3-5 maps the current zoning within the study area as well the surrounding area. Similar to the Comprehensive Plan designations, the study area contains two zoning designations: Mixed Business (MB) and Parks. Excluding street rights-of-way the MB designation covers approximately 98% of the study area while the remaining 2% is dedicated for park use (the Interurban Trail). The purpose of MB zoning is "to encourage the development of vertical and/or horizontal mixed-use buildings or developments along the Aurora Avenue and Ballinger Way corridors" (SMC 20.40.040).

The MB zoning designation for the study area matches and complements the Comprehensive Plan. The MB designation allows for a variety of land uses including apartments, hotel/motels, commercial, retail, office, movie theaters, and performing arts theaters. Outdoor performance centers are also allowed under the MB designation via a special use permit.

Maximum building height for any use in the MB zone is 65 feet.[6] MB regulations limit heights directly across street rights-of-way from R-4, R-6, or R-8 zones to 35 feet for 10 feet horizontally from the required building setback and an additional 10 feet in height for each additional 10 horizontal feet up to the maximum height allowed (SMC 20.50.021). There are additional density bonuses available for multifamily residential buildings up to a maximum of 50 % above the underlying base density when affordable housing units are provided as part of the development (SMC 20.40.230).

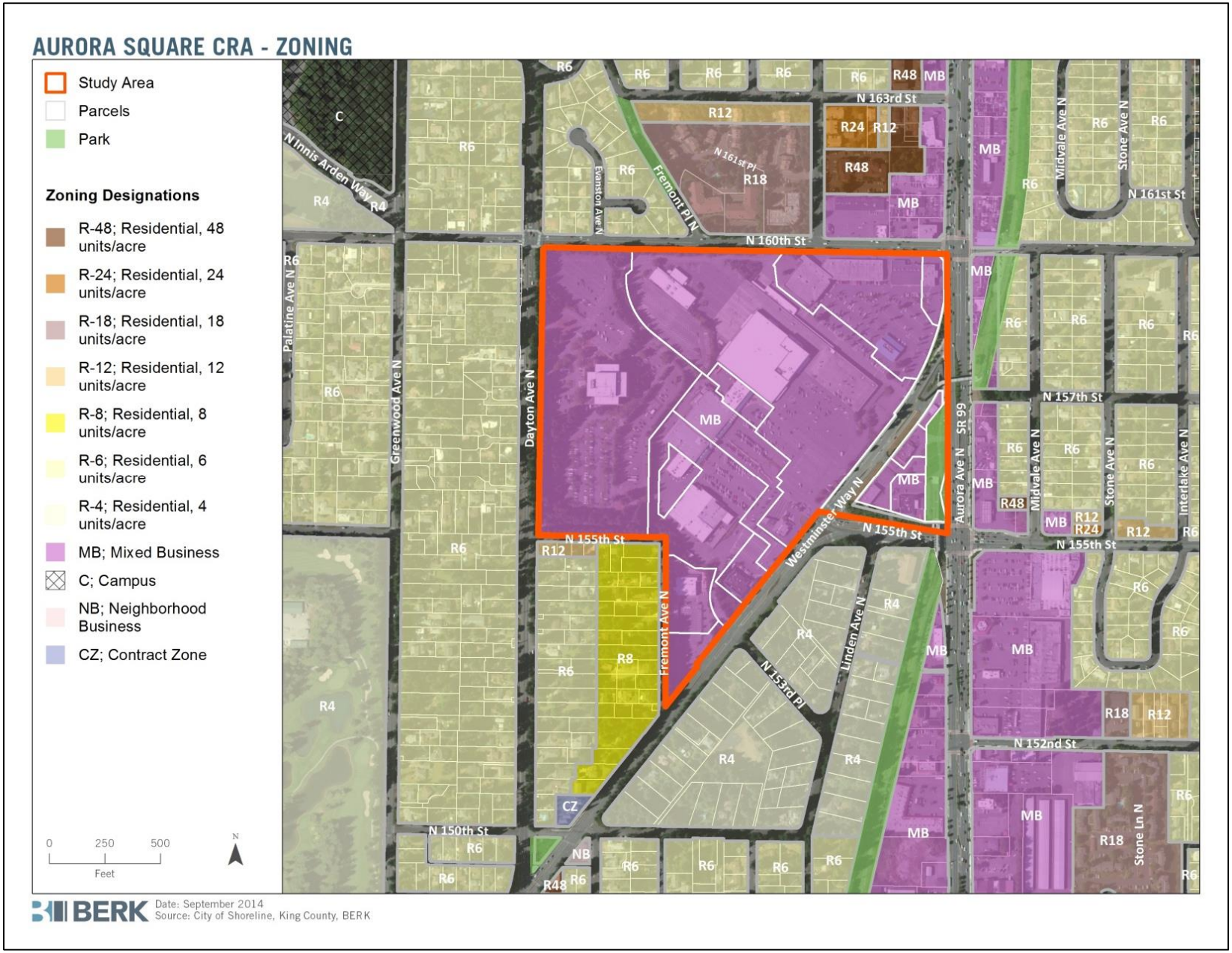
[6] Heights reported in this Draft EIS are measured above average building elevation.

Figure 3-4. Comprehensive Plan Map



Source: City of Shoreline, BERK Consulting 2014

Figure 3-5. Current Zoning Map



Source: City of Shoreline, BERK Consulting 2014

Significant Impacts

This section reviews the impacts of land use changes including the conversion of land uses, the increased intensity of development that could occur, and the compatibility of adjacent land uses.

Impacts Common to All Alternatives

Adding the proposed commercial and residential space to the present space and assuming 800-1,000 square feet per dwelling unit on average, the range of total building space and different FAR across alternatives is presented in Table 3-3.

Table 3-3. Comparison of Alternative Building Space and Floor Area Ratio

Alternative	Projected Building Square Feet	Lot Area Square Feet	FAR
Alternative 1	582,725	2,383,025	0.2
Alternative 2	1,332,725	2,383,025	0.6
Alternative 3	2,082,725	2,383,025	0.9

Source: King County Assessor 2014, BERK 2014

All alternatives would result in a predominant commercial and retail character. Alternatives 2 and 3 would provide for a mixed use commercial and residential character.

Alternative 1: No Action

This alternative assumes Aurora Square continues with a similar commercial retail and office character and the same square footage of buildings and parking as presently located on site. The study area would remain and continue to be auto oriented in use.

Under Alternative 1, the No Action Alternative, the property would continue with retail and office uses without the addition of any multifamily developments. Mixed residential and commercial uses, though allowed by the Shoreline Municipal Code, would not occur; while such uses are possible under the City regulations this alternative assumes that there would be a continuation of present types of uses as a benchmark for other alternatives. Present suburban style development with a low FAR would continue. Businesses may change within the buildings but would continue to focus on retail and commercial uses similar to the current mix. See Table 3-2 for a summary of the current building space and lot area at Aurora Square.

With Alternative 1 No Action, a Planned Action Ordinance would not be adopted, and sign and noise code amendments would not be made. The No Action Alternative is not expected to cause significant direct or indirect impacts. In the absence of a Planned Action Ordinance, development that is not exempt from SEPA would conduct their own site specific incremental reviews.

Alternative 2: Phased Growth

Under Alternative 2, a mixed use environment would be created with residential development introducing up to 500 dwelling units. Additionally, approximately 250,000 square feet of commercial retail or office development would be added to the site. This alternative is considered “phased” since it would not fully realize the development potential of the site, but would create a catalytic mixed use redevelopment that sets the stage for full transformation in Alternative 3. Alternative 2 allows the City to test potential redevelopment impacts and mitigation needs at a moderate level of growth.

Conversions of Land Uses

Together the added space would result in a mixed use environment including new multifamily residential development and increased shopping, commercial and office use. In terms of residential space, a total of up to 500 dwelling units would be introduced to the site including potential new student housing to support nearby Shoreline Community College. The influx of permanent residents on the property would alter the character of the site to include more pedestrian and recreationally focused activities during the day but especially during nights and weekends. In addition, the introduction of new

pedestrian pathways connecting new development across the site as well as creating new connections with the surrounding area, including Shoreline Community College, would increase the activity on the site as more pedestrians and nearby residents would use these new lines of access.

Jobs would increase from the estimated 1,528 existing jobs (per the City's Transportation Master Plan) for the subject study area to 2,361 jobs.

Beyond traditional retail shopping and commercial options, potential new entertainment uses would also be introduced to the site including a movie theater or an outdoor performance venue. Together with added retail space, new entertainment oriented uses would draw more visitors to the site and increase both pedestrian activity and energy on the property, especially in the evenings and on weekends and holidays. New restaurants would also likely be developed on site to serve the increased number of visits by shoppers, entertainment seekers, office workers, and new residents. Together these changes in development and land use would further increase the overall potential future appeal of the CRA property as a destination site.

With the introduction of new multifamily residential buildings and especially new entertainment land uses, in particular an outdoor performance venue or a movie cinema, noise and light generated from the study area would increase. Noise and lights from outdoor theatrical and musical performances as well as lights related to new signage and related advertising would act as sources of increased noise and light production. Physical siting of these uses to orient away from sensitive uses (e.g. single family homes) as well as the application of design guidelines would help reduce these potential impacts.

Changes in Intensity and Height

Under the Phased Growth Alternative, the FAR would increase to 0.6, more than doubling the current land use intensity on the site. This increased level of land use intensity would be realized through more structured parking, reduced surface parking in favor of building space, and taller structures up to 65 feet in height. The bulk of new structures developed under this alternative would also increase.

Redevelopment of the study area under Alternative 2 would result in a more uniform development intensity across the site as large areas of surface parking would be transformed into new physical structures with height and bulk. New development created as part of Alternative 2 would be more uniformly distributed across the site reflecting a departure from the current form of centrally located development surrounded by large areas undeveloped and often vacant surface parking. Redevelopment would increase the amount of area covered by buildings, structured parking, and plazas or other pedestrian-oriented gathering places including a potential outdoor performance space.

Land Use Compatibility

Changes in land use would result in some new types of development in or adjacent to areas where they were not previously allowed, possibly creating use compatibility issues.

In terms of residential use, adding multifamily development would introduce a new land use to the site itself. If new multifamily development were created along N 160th Street or Aurora Ave N there would be little to no anticipated incompatibility of land uses as these areas already contain multifamily structures or retail and commercial space. If multifamily development were to be located across from existing single family development to the west and south of the study area, a potential would exist for compatibility issues in the form of increased pedestrian activity, traffic, and the creation of larger built structures adjacent to smaller single family residences.

Increased commercial and retail uses on the property would complement and enhance the existing mix of retail and commercial uses. The addition of more traditional retail uses such as shopping or new restaurants would be compatible with existing uses. More retail and commercial use would increase the potential for overall intensity of use including traffic and greater use during the evenings and weekends.

A new movie cinema, live theater, or outdoor performance space would introduce a new entertainment oriented type of use to the study area. In terms of physical compatibility with surrounding land uses, these types of uses would introduce new building heights and bulk to the area. Entertainment oriented uses would not only increase the level of noise and light generated by the property but also increase the number of visitors to the site especially during the evenings, weekends, and holidays.

Additional office development would add increased height and bulk to the site as well as increased traffic and increased numbers of daytime visitors. The development of new office space would most likely also be accommodated by the building of associated parking structures to support new workers on site. New office space would contribute to an increased number of visitors to the site during the weekdays and an associated potential increase in pedestrian and retail activity within the redeveloped CRA property.

Overall, the indirect impact of new land uses toward the existing surrounding land uses would be relative to the placement and location of new uses within the CRA study area. Given the existing semicircle of single family residences to the west and the mix of multifamily and commercial space to the north and east, the potential for land use incompatibility decreases as new development is placed more centrally or easterly within the CRA site. New development on the western and more southern edges of the study area would introduce buildings of increased height and bulk, more traffic, increased pedestrian activity and more activity during the evenings and weekends thereby creating a potential for incompatibility of land uses. Any new entertainment use or uses, especially the development of an outdoor performance space, could increase light and noise experienced by neighboring residences.

However, due to the surrounding street network and topographic profile of the site, impacts could be minimized. Major and minor arterial rights-of-way surround the entire site and act as a man-made buffer between surrounding land uses (including single family) and new or enhanced uses on the site. The topographic profile of the study area also acts as a natural mitigating element as a combination of steep slopes and descending elevation places not only horizontal but vertical distances between surrounding land uses and any potentially incompatible land uses introduced as part of the CRA redevelopment. The application of design guidelines including setbacks would further reduce any potential incompatible land use impacts.

Alternative 3: Planned Growth

Alternative 3 would be similar to Alternative 2 except that 1,000 dwelling units and 500,000 square feet of commercial retail and office space would be added. As with Alternative 2, a Planned Action would be adopted as part of Alternative 3 to help stimulate growth.

Conversion of Land Uses

Together the added space would result in a mixed use environment including new multifamily residential development and increased shopping, commercial and office use. In terms of residential space, a total of up to 1,000 multifamily dwelling units would be introduced to the site including the potential for new student housing to support nearby Shoreline Community College. The influx of permanent residents and students on the property would convert the use to include more pedestrian and recreationally focused activities during the day but especially during nights and weekends. In addition, the introduction of new pedestrian pathways connecting new development across the site as well as creating new connections with the surrounding area and Shoreline Community College would increase the activity on the site as more pedestrians, new and nearby residents would use these new lines of access.

Jobs would approximately double from present conditions, increasing from 1,528 jobs to 3,195 jobs.

Beyond traditional retail shopping and commercial options, potential new entertainment uses would also be introduced to the site including a movie cinema or outdoor performance venue. There is also potential for classroom or meeting space to be developed for use by Shoreline Community College and its staff and students. Together with added retail space, new entertainment oriented land uses and educational spaces would draw increased pedestrian activity and energy to the site especially in the evenings and on weekends and holidays. A number of new restaurants would also likely be developed on site to serve the increased number of visits by shoppers, entertainment seekers, office workers, students, and new residents. Together these changes in development and land use would further increase the overall potential future appeal of the CRA study area as a destination site not only for City of Shoreline residents but also for residents of other nearby municipalities.

With the introduction of new multifamily residential buildings and especially new entertainment land uses, in particular an outdoor performance venue or a movie cinema, noise and light generated from the study area would increase. Noise and lights from outdoor theatrical and musical performances as well

as lights related to new signage and related advertising would act as sources of increased noise and light produced by the property. Physical siting of these uses as well as the application of design guidelines and mitigation actions would help reduce these potential impacts.

Changes in Intensity and Height

This level of additional growth would increase the FAR to be more urban in character at 0.9.

Under the Planned Growth Alternative, the FAR would increase to 0.9, more than tripling the current land use intensity of the site. This level of increased land use intensity would be realized through more structured parking, reduced surface parking in favor of new buildings, and taller structures up to 65 feet in height. The bulk, number, and array of new structures developed under this alternative would also increase from those that would be produced under Alternative 2.

Redevelopment of the study area under Alternative 3 would result in an even more uniform development intensity across the site as large areas of existing surface parking would be redeveloped into new buildings with taller heights and greater bulk. New development created as part of Alternative 3 would be more uniformly distributed across the site and better connected reflecting a departure from the current form of centrally located development surrounded by large areas undeveloped and often vacant surface parking lots that effectively act to separate current land use activities from one another. Redevelopment would increase the amount of area covered by buildings, structured parking, and plazas or other pedestrian-oriented gathering places including a potential outdoor performance space or movie cinema.

Land Use Compatibility

Changes in land use would result in some new types of development in or adjacent to areas where they were not previously allowed, possibly creating use compatibility issues.

In terms of residential use, adding multifamily development would introduce a new land use to the site itself. If new multifamily development were created along N 160th Street or Aurora Ave N there would be little to no anticipated incompatibility of land uses as these areas already contain multifamily structures or retail and commercial space. If multifamily development were to be located across from existing single family development to the west and south of the study area, a potential would exist for compatibility issues in the form of increased pedestrian activity, traffic, and the creation of larger built structures adjacent to smaller single family residences. The addition of student housing would also contribute to increased activity on site as well as pedestrian traffic both on site and between Shoreline Community College and a redeveloped CRA site.

Increased commercial and retail uses within the site would complement or enhance the existing mix of retail and commercial uses. The addition of more traditional retail uses such as shopping or new restaurants would be compatible with existing and surrounding uses. More retail and commercial use would increase the potential for overall intensity of use including increased traffic and greater use during the evenings and weekends.

A new movie cinema, live theater, or outdoor performance space would introduce a new entertainment oriented type of use to the study area. In terms of physical compatibility with surrounding land uses, these types of uses would introduce new building heights and bulk to the area. Entertainment oriented uses would not only increase the level of noise and light generated at the site but also increase the number of visitors to the site especially during the evening, weekends, and holidays.

Additional office development would add increased height and bulk to the site as well as traffic and greater numbers of daytime visitors. The development of new office space would most likely be also accommodated by the building of associated parking structures to support the new workers on site. New office space would contribute to an increased number of visitors to the site during the weekdays and an associated potential increase in pedestrian and retail activity within a redeveloped CRA.

Overall, the impact of new land uses to surrounding land uses would be relative to the placement of such uses within the study area. Given the existing pattern of single family residences to the west and south and the mix of multifamily and commercial space to the north and east, the potential for land use incompatibility decreases as new development is placed more centrally or easterly on the site. As

Alternative 3 expresses a more robust version of the Alternative 2, the siting of new or redeveloped uses within the CRA study area becomes more important in terms of potential impacts to surrounding areas.

New development on the western and southern edges of the study area would introduce buildings of increased height and bulk, more traffic, increased pedestrian activity and more activity during the evenings and weekends. Any new entertainment uses, especially the development of an outdoor performance space, would increase the light and noise experienced by neighboring residences. New retail, commercial, office or multifamily space would also contribute to increased activity, pedestrian use, traffic and the number of visitors to the site.

The surrounding street network and topographic profile help reduce the potential for impacts as described under Alternative 2. The application of design guidelines including setbacks would further reduce any potential incompatible land use impacts.

Mitigation Measures

Incorporated Plan Features

Alternative 1

The No Action alternative would retain the current Comprehensive Plan land use and zoning designations as well as design guidelines and transition area standards. These include upper story setbacks across from R-4, R-6, and R-8 zoned areas to the northwest, west, and south of the study area. These standards would not be updated.

Alternative 2 and Alternative 3

Action Alternative 2 and Alternative 3 would retain the current Comprehensive Plan land use designations of Mixed Use 1 (MU1) and Public Facilities (PF) and retain the current zoning designation of Mixed Business (MB). Current applicable design guidelines including transition area standards would also be retained.

The implementation of Alternative 2 or Alternative 3 would also include the establishment of a special overlay district that allows for special rules to encourage the creation of an entertainment district. Potential code amendments would consider and address both onsite and offsite changeable message signs advertising businesses and events at the redeveloped site and noise and light allowances for outdoor performances and other special events. Sign code changes would include sign design standards. Noise regulations allow for park concerts between 9 am and 10:30 pm, and the limitation of 10:30 pm would be altered to a later time to recognize the urban nature of the site and the special event nature of the entertainment district. The outdoor venue would be designed to orient sound away from sensitive receivers and together with the Noise ordinance amendments would continue to provide parameters for personal enjoyment of residential properties.

Applicable Regulations and Commitments

- SMC 20.50.020: Contains design guidelines, development dimensions, standards, and conditions for development within areas covered by the MB zoning designation. These design guidelines and development standards include site coverage and height as well as setback requirements.
- SMC 20.50.021: Addresses transition standards where development within MB zones abuts single family districts. Development standards include additional setbacks, building offsets, and heights.
- SMC 20.50.180: Addresses building orientation and scale.
- SMC 20.50.205: Addresses light standards including avoiding light trespass.
- SMC 20.50.240: Contains commercial site design guidelines including site frontage, rights-of-way lighting, corner sites, site walkways, public places, multifamily open space, outdoor lighting, service areas, and mechanical equipment.

- SMC 20.50.250: Addresses commercial building design including building articulation, materials, modulation, and facade treatments.

Development in the analysis area would be subject to the City's existing design review process and would be required to comply with all applicable urban design principles.

In addition to design review and the application of design guidelines, development in the MB zone would be required to comply with all applicable development regulations contained in the Shoreline Zoning Code.

Other Potential Mitigation Measures

Some impacts were identified for Alternative 2 and Alternative 3 based on conversion of land uses, changes in intensity and height, and land use compatibility. The following mitigation measures are intended to reduce such potential impacts.

- Location and siting of new uses should consider their placement relative to existing surrounding land uses. Given the existing pattern of surrounding land uses, the potential for reducing incompatibilities increases as new development is placed more centrally or easterly on the CRA property. This would hold especially true for any outdoor entertainment performance spaces that would produce associated light and noise impacts.
- See the Light and Glare section for additional mitigation discussion.

Significant Unavoidable Adverse Impacts

The Action Alternatives would result in a greater intensity of land use, greater employment, the addition of residences in the study area and/or the introduction of new entertainment oriented land uses. Land would be used more intensively for urban uses and currently underutilized land would be converted to active use with the development of buildings with greater height and bulk.

Under the action alternatives the overall land use pattern of the study area would change especially with the introduction of multifamily or entertainment oriented uses. Alternative 3 assumes the most development and growth. Changes to land use have the potential to create land use conflicts in some locations, but impacts can be mitigated with sensitive site design and design guidelines as identified under mitigation measures above.

3.2 Light and Glare

Affected Environment

This section discusses existing conditions relating to light and glare on the Aurora Square site and in adjacent areas.

Analysis Area Character

The light and glare analysis area consists of the Community Renewal Area (CRA) identified in Chapter 2 as well as adjacent areas. The study area is bounded by N 160th Street to the north, Aurora Avenue N to the east, Westminster Way, Fremont Avenue N and N 155th Street to the south, and Dayton Avenue N to the west. Areas adjacent to the development site are also included in the analysis.

As described in Section 3.1 - Land Use, most of the buildings on the development site are in commercial use, with the addition of the WSDOT office building and the Northwest School for Hearing-Impaired Children. The commercial buildings are generally one to two stories in height, while the WSDOT office building is six stories. All buildings on the site are surrounded by large surface parking lots. The study area site has sloping topography and descends from over 500 feet at western and southwest edge to less than 420 feet at eastern and northeastern ends.

The CRA is bordered by a variety of land uses. Single family residential uses are mainly concentrated around the study area from the intersection of Fremont Place N and N 160th Street to the north and then wrapping to the west and south toward the intersection of Westminster Way N and N 155th Street. A cluster of multi-family residential buildings are located north of the site and east of the intersection of Fremont Place N and N 160th Street. Two smaller multi-family developments are located respectively to the west and south of the CRA. East of the CRA on Aurora Avenue N are a mix of commercial and retail uses between the intersections of N 155th Street and N 160th Street.

Sources of Light and Glare

The primary sources of light and glare in the current development are lights in surface parking lots, exterior building lights, illuminated signs, and traffic lights on Aurora Avenue. Due to the greater usage of artificial illumination, light and glare is more of a concern at night than during daytime hours. The amount of light and glare on the development site differs significantly throughout the study area. On the east side of the area facing Aurora Avenue North, there is substantial light and glare from street lights, traffic lights, and motor vehicle lights on Aurora Avenue, signs for neighboring businesses, and the parking lights and signs on the Aurora Square site.

By contrast, the northwestern, western, and southern sections of the site have relatively little light and glare, and even less that is visible to neighboring residents. On the west edge of the study area at Dayton Avenue N, substantial trees and a steep slope combine to shield neighboring single family development from view of Aurora Square and its associated lights. Likewise, the streets surrounding the Northwest School for Hearing-Impaired Children, Fremont Avenue N and the southern part of Westminster Way N (between N 155th St and Fremont Ave) have substantial tree cover.

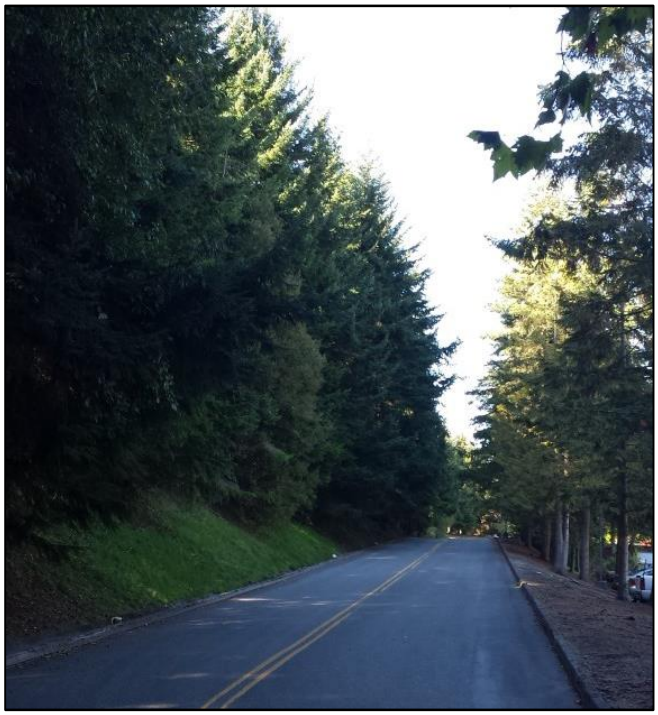
Sources of light and glare in the CRA include free-standing lights in surface parking lots, located throughout the site, and exterior building illumination. Figure 3-6 shows an example of the type of parking light present on the site. Surface parking lot areas are located extensively throughout the site, as illustrated in Figure 2-2 in Chapter 2.

Figure 3-6. Light in surface parking lot

Source: BERK Consulting, 2014

Some parking lot lights are shielded from neighboring uses by trees and sloping topography, including the lights surrounding the WSDOT building, as shown in Figure 3-7. The lights along Westminster Way N are not shielded from neighboring uses, which are primarily commercial in nature.

Figure 3-7. Trees bordering interior road next to WSDOT building



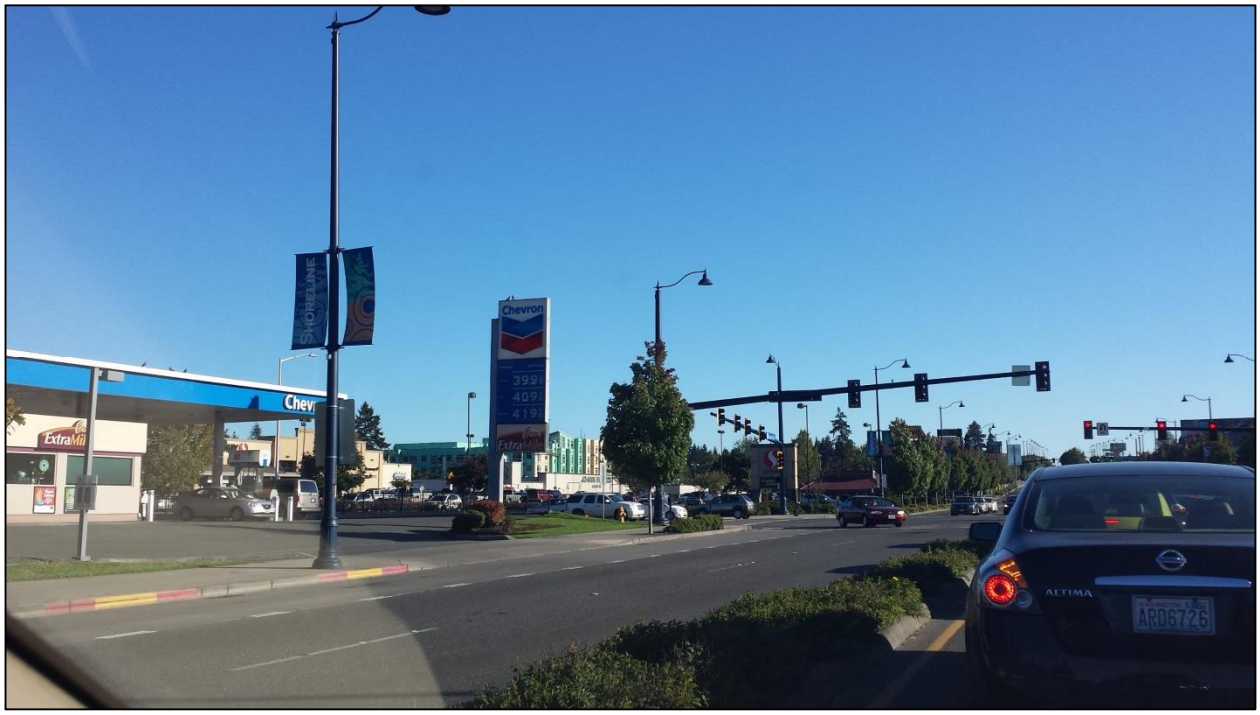
Source: BERK Consulting 2014

Lights emanating from buildings in the CRA are another source of light and glare. This can include exterior building lights as well as indoor lights emanating through glass doors and windows. This is

primarily an issue with retail buildings on the site, many of which have large storefront windows and remain lit well into the evening hours. Office buildings are mostly unoccupied at night and use primarily security lighting at that time.

In addition to the parking lot lights and building lights directly on the CRA site, there are other sources of light and glare on Aurora Avenue N adjacent to the study site, particularly between N 155th Street and N 160th Street. Aurora Avenue North is a state highway with high traffic volumes. Light sources include traffic lights at intersections, street lights, and motor vehicle lights. In addition, there are several retail buildings on Aurora Avenue that emit building light or have brightly lit signs. This includes the Chevron gas station, located across Aurora Avenue N from the sit and shown in Figure 3-8. There are several large signs on the east side of Aurora Avenue North. The largest is a billboard near the intersection with N 155th Street. As shown on Figure 2-2, the area between Westminster Way and Aurora Avenue forms a buffer, separating the southern portion of the CRA from Aurora Avenue. This triangle of land contains several vacant commercial buildings, a pedestrian overpass, and areas of thick vegetation. As a result, the portions of the CRA near N 155th Street are more shielded from off-site light and glare than the northern portions near N 160th Street.

Figure 3-8. Signs and Light on Aurora Avenue N



Source: BERK Consulting 2014

Illuminated Signage

The CRA contains several free-standing pylon signs around the perimeter, all located along Westminster Way N and Aurora Ave N. These signs advertise the businesses operating in the Aurora Square development and are illuminated during evening hours. The northernmost sign is located inside the surface parking lot off Aurora Avenue, just south of the intersection with N 160th Street. Two larger pylon signs are located on Westminster Way, one near the southern entrance, just north of N 155th Street, and another inside the surface parking lot at the intersection of Westminster and 155th Street. None of these illuminated signs feature changeable digital messages. Examples of free-standing and building signage present on the site are shown in Figure 3-9 and Figure 3-10.

Figure 3-9. Free-standing signs on Westminster Way N

Source: BERK Consulting 2014

Figure 3-10. Building Sign

Source: BERK Consulting, 2014

Significant Impacts

Impacts Common to All Alternatives

Light and glare is produced as a consequence of existing and new development and uses. Common sources of light and glare related to the built environment include:

- Buildings: Pathways, way-finding, safety elements, interior lighting, and exterior lighting
- Signage: Monument signs, pylon signs, advertisements, entry, way-finding, retail banners, building-mounted exterior signs
- Parking: Pylon lighting, pedestrian pathways, entry and exit
- Vehicular: Cars and transit, parking areas

Alternatives for the Aurora Square CRA include: Alternative 1- No Action; Alternative 2 - Phased Growth; and Alternative 3 - Planned Growth. All alternatives would result in a predominantly commercial and retail character for the site. Alternatives 2 and 3 would introduce mixed use commercial and residential elements to the site, including the potential addition of an outdoor entertainment performance venue.

Alternatives 2 and 3 would also include proposed code changes to allow for increased size and variety of allowable signs on the Aurora Square CRA site as shown in Table 3-4. There are additional proposed sign criteria code changes specific for an Aurora Square Overlay as outlined in Table 3-5.

Table 3-4. Current and Proposed Sign Code Criteria for Aurora Square CRA

	Current Code (MB Zone)	Proposed Code (Aurora Square CRA)
Monument Signs		
Maximum Area per Sign Face	100 square feet	100 square feet
Maximum Height	12 feet	12 feet
Maximum Number Permitted	▪ 1 per street frontage - or - ▪ Two per street frontage if the frontage is greater than 250 feet. and each sign is minimally 150 feet. apart from other signs on same property.	Monument signs are for way-finding only. No individual business or tenant to be allowed on monument signage except as placement on tenant panels within the way-finding system.
Illumination	Permitted	Permitted
Building Mounted Signs		
Maximum Sign Area	▪ 50 square feet (Each tenant) ▪ 10 square feet (Building Directory) ▪ 25 square feet (Building Name Sign)	15% of building fascia with a maximum of 500 square feet
Maximum Height	Not to extend above the building parapet, soffit, or eave line of the roof. If perpendicular to building then 9-foot clearance above walkway.	Not to project above the roof line
Number Permitted	1 per business per facade facing street frontage or parking lot.	Allowed Sign Area may be broken down into multiple signs, provided the aggregate area remains equal or less than 15%.
Illumination	Permitted	Permitted
Under-Awning Signs		
Maximum Sign Area	12 square feet	12 square feet
Maximum Clearance from Grade	9 feet	9 feet
Maximum Height (feet)	Not to extend above or beyond awning, canopy, or other overhanging feature of a building under which the sign is suspended	Not to extend above or beyond awning, canopy, or other overhanging feature of a building under which the sign is suspended
Number Permitted	1 per business per facade facing street frontage or parking lot.	1 per business entrance or frontage
Illumination	Permitted	Permitted
Driveway Entrance/Exit		
Maximum Sign Area	8 square feet	Not Applicable to Aurora Square CRA.
Maximum Height	48 inches	
Number Permitted	1 per driveway	
Illumination	Permitted	

Source: SMC 20.50.540(G); City of Shoreline, 2014

Table 3-5. Additional Sign Code Criteria for Aurora Square Overlay

Additional Sign Criteria for Aurora Square Overlay	
Projecting Signs	
Maximum Sign Area	10% of a tenant's allotted wall sign area may be utilized for one or more projecting signs.
Maximum Height	Not to exceed the highest point of the building to which it is attached.
Number Permitted	One (1) projecting sign per tenant, per fascia.
Illumination	Required
Pylon Signs	
Maximum Sign Area	300 square feet
Maximum Height	25 feet
Number Permitted	Aurora Square CRA is permitted up to three (3) pylon signs.
Illumination	Required
Miscellaneous	
Neon and LED	Visible neon tubing is permitted as a sign element within the Aurora Square CRA Overlay District. Visible neon or LED outline lighting is also permitted.
Electronic Messaging	Electronic Messaging signage is allowed only on Pylon Signs.
Definition of On-site Signage	The Aurora Square Overlay District is comprised of the entire area -- including right-of-way--that was designated as the Aurora Square Community Renewal Area. For establishments located within the Aurora Square Overlay District, any signage located within the Aurora Square Overlay District is considered "on-site."
Movie and Event Advertising	Temporary banners of any size are permitted for advertising movies or events within the Aurora Square Overlay District.

Source: City of Shoreline, 2014

Potential impacts related to each of the alternatives are discussed below.

Alternative 1: No Action

This alternative assumes Aurora Square continues with a similar commercial retail and office character and the same square footage of buildings and parking as presently located on site. The study area would remain and continue to be auto oriented in use.

Under Alternative 1, the No Action Alternative, the property would continue with retail and office uses without the addition of any multifamily developments. Mixed residential and commercial uses, though allowed by the Shoreline Municipal Code, would not occur. Additionally, although outdoor performance venues are allowed under current zoning via a special use permit, it is anticipated that no outdoor entertainment spaces would be developed under the No Action Alternative. Businesses may change within the buildings but would continue to focus on retail and commercial uses similar to the current mix.

With Alternative 1 No Action, a Planned Action Ordinance would not be adopted, and sign code and noise regulation amendments would not be made. The No Action Alternative is not expected to cause significant direct or indirect lighting and glare impacts and future light and glare conditions under Alternative 1 would be similar to existing conditions.

Alternative 2: Phased Growth & Alternative 3: Planned Growth

Under Alternative 2, a mixed use environment would be created with multifamily residential development introducing up to 500 dwelling units. Additionally, approximately 250,000 square feet of commercial retail or office development would be added to the site. This alternative is considered “phased” since it would not fully realize the development potential of the site, but would create a catalytic mixed use redevelopment that sets the stage for full transformation in Alternative 3. Alternative 2 allows the City to test potential redevelopment impacts and mitigation needs at a moderate level of growth.

Alternative 3 would be similar to Alternative 2 except that 1,000 dwelling units and 500,000 square feet of commercial retail and office space would be added. As with Alternative 2, a Planned Action would be adopted as part of Alternative 3 to help stimulate growth. The bulk, number, and array of new structures developed under this alternative would also increase from those that what would be produced under Alternative 2. Both Alternatives 2 and 3 would likely introduce new entertainment spaces in the form of outdoor performance center space or movie theaters.

The following provides an overview of light and glare impacts across various elements including: buildings, signage, parking, traffic, and outdoor performance event space. As Alternative 3 is a more intense version of Alternative 2 it is assumed light and glare impacts would be commensurate with the difference in intensity and scale of redevelopment across the two alternatives.

Building Light and Glare

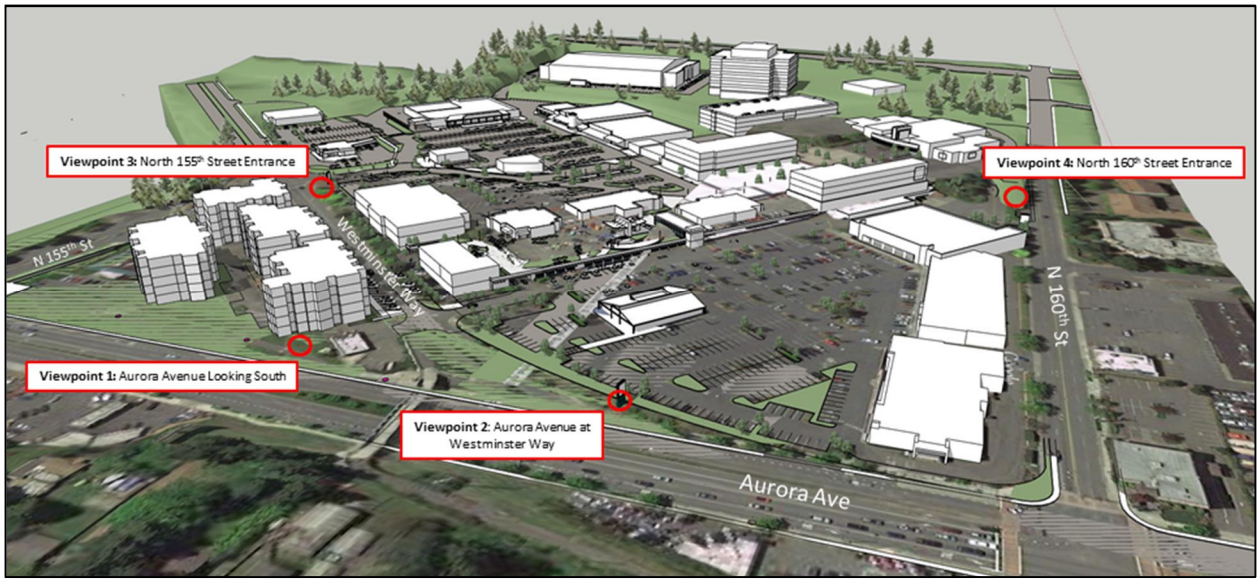
Together the added space would result in a mixed use environment including new multifamily residential development and increased shopping, commercial and office use. In terms of residential space, a total of between 500 and 1,000 dwelling units would be introduced to the site. The additional development of commercial and residential space would increase the amount of light and glare produced by exterior and interior lighting, pedestrian paths, safety element lighting, and attached exterior signage such as storefront names. With increased residential and commercial use, light and glare associated with increased building space would be more evident during evening hours, as well as the fall and winter seasons.

Signage Light and Glare

Per the proposed sign code changes, Alternative 2 would allow the introduction of new types of signs and larger versions of existing types of signs. Larger signs would include building-mounted signs that can cover up to 15% of the building face, up to a maximum size of 500 square feet. Free-standing pylon signs up to 25 feet in height would also be allowed under the amended sign code. These pylon signs would be allowed to contain up to 300 square feet of signage area and could include neon and LED illuminations, as well as changeable digital messages.

Renderings of potential locations of an example 25-foot tall pylon sign with a 300 square foot illuminated digital face are highlighted in Figure 3-12 through Figure 3-15. below. In addition to the potential pylon entry signs, Figure 3-15. shows examples of building-mounted signs allowed under the proposed sign code amendments. Figure 3-11 shows a digital illustration of a redeveloped Aurora Square CRA and locations of the sign renderings that follow. The images below do not reflect actual or approved site designs for the Aurora Square CRA. The renderings below are for illustrative and planning purposes only.

Figure 3-11. Digital Massing of Redeveloped Aurora Square CRA and Locations of Pylon Sign Simulations



Source: DDG Architects, 2014; BERK, 2014

Figure 3-12. Viewpoint 1: Aurora Avenue Looking South

Source: DDG Architects, 2014; BERK, 2014

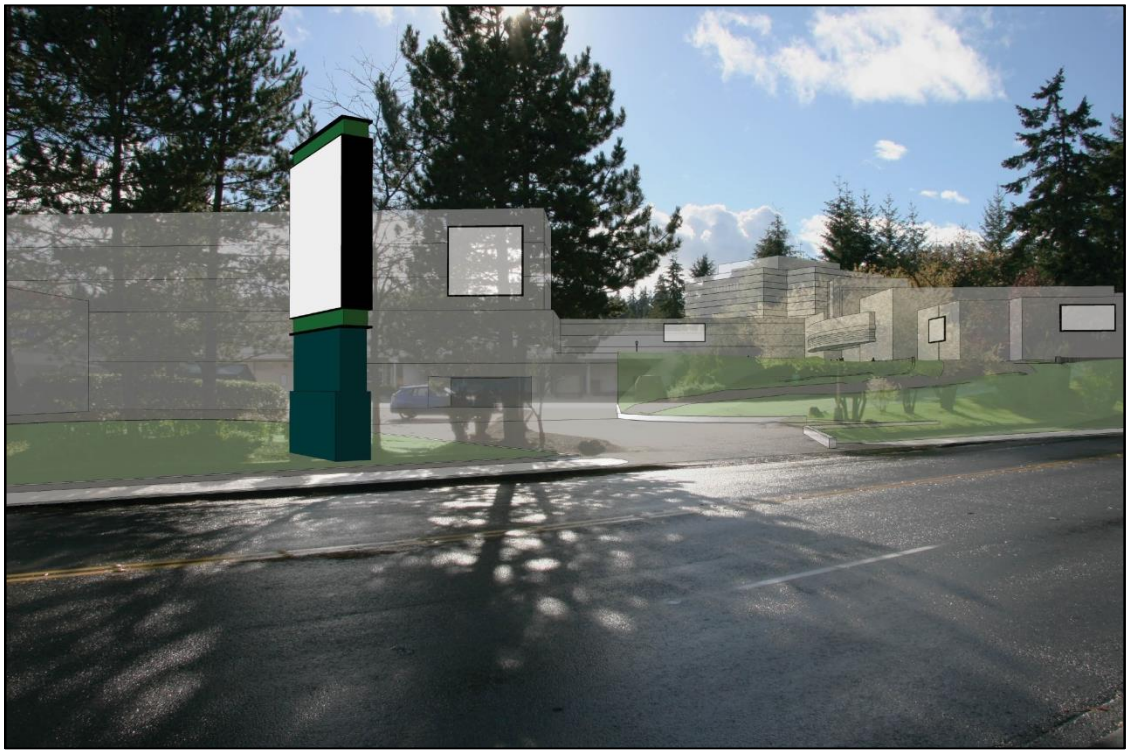
Figure 3-13. Viewpoint 2: Aurora Avenue at Westminster Way

Source: DDG Architects, 2014; BERK, 2014

Figure 3-14. Viewpoint 3: North 155th Street Entrance

Source: DDG Architects, 2014; BERK, 2014

Figure 3-15. Viewpoint 4: North 160th Street Entrance



Source: DDG Architects, 2014; BERK, 2014

Light and glare from the addition of new pylon signs and lit building mounted signs would increase the overall light and glare produced from the site. Any new signs that emit light and glare would have less of a cumulative impact the closer that these types of signs are located to Aurora Avenue as the existing light and glare produced by existing traffic flows, street lights, and commercial signs are already substantial.

Parking & Vehicular Light and Glare

Increased commercial and residential activity would increase the amount of vehicles traveling to and from a redeveloped Aurora Square CRA. Light emitted from car and transit vehicle headlights and glare reflected off of traveling and parked vehicles would increase with the anticipated rise in traffic. This extra illumination from vehicles would be more pronounced during evening hours and the fall and winter seasons. Parking light fixtures may also be a source of increased illumination. However, the anticipated development related to Alternative 2 is expected to replace existing open space parking areas with new buildings and illumination directly related to parking may actually decrease. Alternative 3 is expected to have even greater amounts of current parking converted to new buildings and uses.

Outdoor Performance Center

Beyond traditional retail shopping and commercial options, potential new entertainment uses would also be introduced to the site including a movie theater or an outdoor performance venue. Regulations allow for park concerts and related uses of lighting for events between 9 am and 10:30 pm, and the limitation of 10:30 pm would be altered to a later time to recognize the urban nature of the site and the special event nature of the entertainment district. As a result, the introduction of new entertainment land uses, light and glare generated from the study area would increase due to the use of lighting related to entertainment events (e.g. plays, concerts, outdoor events, etc.). Lights related to new entertainment venue signage and advertising would also act as sources of increased light production. Light and glare associated with entertainment spaces would be more pronounced during evening hours and the fall and winter seasons.

Summary of Light and Glare Impacts

The cumulative light and glare produced and emitted from a redeveloped Aurora Square CRA would impact the surrounding areas. In particular, single family residences to the northwest, west, and southeast of the site would be more sensitive to light and glare generated from new buildings, signage, traffic, and entertainment related activities. To the east, the adjacent Aurora Avenue thoroughfare and ancillary businesses would be less impacted by light and glare from the Aurora Square CRA as there are already high levels of light and glare generated by existing uses, traffic, and activities.

Alternative 1 is expected to have light and glare impacts similar to existing conditions. Alternatives 2 and 3 both introduce new, more urban development to the Aurora Square site including new residential and entertainment oriented spaces as well as higher densities of commercial and office space. Introductions of new types and sizes of signs would also occur for Alternatives 2 and 3 via corresponding changes to the code. Light and glare impacts for Alternatives 2 and 3 are essentially the same in character and differ in amount on intensity and glare being produced. This difference in light and glare production corresponds to the respective levels of redevelopment proposed under each alternative.

Physical siting of new uses, buildings, and signs that emit greater amounts of light and glare can be oriented away from sensitive uses (e.g. single family homes) to help reduce these potential impacts as well as the application of design guidelines. Natural mitigation of light and glare also exists as a result of the physical topography and layout of the site. The further west from Aurora Avenue, the greater the rise in elevation with periodic steep slopes that together provide natural breaks from light and glare sources. Deciduous and evergreen trees line N 160th St, Dayton Ave N, and parts of Westminster Way providing further natural barriers that help inhibit the spread of light and glare that can be emitted from the site. The mitigating effects the deciduous trees bordering the site will be greater in the late spring and summer due to leaf drop in late fall.

Mitigation Measures

Incorporated Plan Features

Alternative 1

The No Action alternative would retain the current zoning and Comprehensive Plan land use designations as well as design guidelines and transition area standards. Existing sign code criteria would remain intact and no new sign types or increases in sign size allowances would be allowed. No additional mitigation measures would be required under the No Action Alternative.

Alternative 2 and Alternative 3

Alternative 2 and Alternative 3 would retain the current Comprehensive Plan land use designations of Mixed Use 1 (MU1) and Public Facilities (PF) and retain the current zoning designation of Mixed Business (MB). Current applicable design guidelines including transition area standards would also be retained.

The implementation of Alternative 2 or Alternative 3 would also include the establishment of a special overlay district that allows for special rules to encourage the creation of an entertainment district. Potential code amendments would consider and address both onsite and offsite changeable message signs advertising businesses and events at the redeveloped site and noise and light allowances for outdoor performances and other special events. Sign code changes would include sign design standards and the introduction of new sign types and sizes. The outdoor venue would be designed to orient light and glare away from sensitive receptors and together with the Noise ordinance amendments would continue to provide parameters for personal enjoyment of residential properties.

Applicable Regulations and Commitments

- SMC 20.50.021: Addresses transition standards where development within MB zones abuts single family districts. Development standards include additional setbacks, building offsets, and heights.
- SMC 20.50.180: Addresses building orientation and scale.

- SMC 20.50.205: Addresses light standards including avoiding light trespass. For example, a lamp or bulb light source installed on commercial property and visible from any residential property must be shielded such that the light source is no longer directly visible. This provision also excludes certain types of lighting (e.g. search lights, laser lights, strobe lights, etc.).
- SMC 20.50.240(H): Contains commercial guidelines for outdoor lighting including pole heights for parking and pedestrian lights and shielding of fixtures to prevent direct light from entering neighboring property.
- SMC 20.50.250: Addresses commercial building design including building articulation, materials, modulation, and facade treatments.
- SMC 20.50.540(G): Addresses sign area, heights, types, illumination, and number of maximum allowable signs.

Development in the analysis area would be subject to the City's existing design review process and would be required to comply with all applicable urban design principles.

In addition to design review and the application of design guidelines, development in the MB zone would be required to comply with all applicable development regulations contained in the Shoreline Zoning Code.

Other Potential Mitigation Measures

Some impacts were identified for Alternative 2 and Alternative 3 based on new buildings, signage, parking, traffic, and new uses including entertainment spaces. The following mitigation measures are intended to reduce such potential impacts.

- Location and siting of new buildings, signs, and entertainment spaces should consider their placement relative to existing surrounding land uses. Given the existing pattern of surrounding land uses, the potential for mitigating land use incompatibility increases as new development is placed more centrally or easterly on the Aurora Square property. This would hold especially true for any outdoor entertainment performance spaces that would produce associated light and glare impacts.
- See the Land Use section for additional mitigation discussion.

Significant Unavoidable Adverse Impacts

The Action Alternatives would result in increased light and glare as a consequence of new buildings, new and larger signs, increased vehicular traffic, and/or the introduction of new entertainment-oriented land uses. Land would be used more intensively for urban oriented uses and currently underutilized land would be converted to active use with an associated increase in light and glare generation normally associated with more intense redevelopment.

Under the action alternatives the overall production of light and glare in the study area would change, especially with the introduction of multifamily or entertainment oriented uses. Alternative 3 assumes the most development and growth. Changes to light and glare have the potential to create land use conflicts in some locations, but impacts can be mitigated with sensitive site design and design guidelines as identified under mitigation measures above.

3.3 Transportation

Affected Environment

This section discusses existing conditions relating to the transportation study area, including an inventory of transportation facilities and services, identification of existing traffic volumes, and an evaluation of existing operating conditions. The inventory summarizes the street network, intersections, transit, bicycle and pedestrian facilities in the transportation study area. A Synchro traffic operations model is used to evaluate intersection operations. Figure 3-16 shows the transportation study area and Aurora Square CRA boundaries.

Existing Roadway Network

The existing road network is characterized by a series of north-south and east-west streets that provide circulation to and around the Aurora Square CRA site. In addition, Westminster Way N runs northeast-southwest, allowing traffic to travel on a diagonal between N 145th Street and Aurora Avenue N. The transportation study area includes:

Aurora Avenue N (SR 99) is a principal arterial that runs along the east side of the study area. This north-south corridor has four general-purpose travel lanes, two business access transit (BAT) lanes that are used by buses and allow right-turning movements for general-purpose traffic, a center median, and additional left-turn lanes at intersections and select midblock locations. Aurora Avenue N carries high volumes of regional traffic and provides a direct connection between Shoreline and nearby communities, including Seattle, Edmonds, and Lynnwood. During commute hours, high traffic volumes can cause congestion and delays in the study area. The Washington State Department of Transportation (WSDOT) has designated the portion of SR 99 through the City of Shoreline as a Highway of Statewide Significance.

Westminster Way N is a four-lane to five-lane principal arterial between N 145th Street and N 155th Street with center medians or left turn channelization at roadway primary intersections and driveways. The street serves the Aurora Square driveways along the south side of the development. Westminster Way N between Aurora Avenue N and N 155th Street is classified as a minor arterial and primarily serves southbound right-turning volumes from Aurora Avenue N. The street lacks sidewalks along most of the corridor, but has sidewalks on the approaches to the N 155th Street intersection.

Greenwood Avenue N is a north-south collector arterial that connects N 145th Street, N 160th Street and the entrance to Shoreline Community College. Within the study area, Greenwood Avenue N is a two-lane roadway with paved shoulders and stretches of paved walkway along the east side of the street from N 155th Street to N 160th Street. A separated walkway is present along the east side of the street from N 145th Street to N 155th Street. A portion of this walkway is paved while the remainder is an informal footpath.

Dayton Avenue N is a north-south, two-lane minor arterial that connects between Westminster Way N and N 160th Street within the study area. The street widens to include a center two-way-left-turn lane north of the access to the WSDOT headquarters offices, and widens to include left turn and right turn lanes approaching N 160th Street. The street includes paved shoulders, on-street parking and some small segments of sidewalks.

N 160th Street is an east-west minor arterial between Aurora Avenue N and Greenwood Avenue N. The street is a primary link to the Shoreline Community College campus and provides access to the three north driveways of Aurora Square. Between Dayton Avenue N and Aurora Avenue N, the street is four lanes. To the west of Dayton Avenue N, N 160th Street has two travel lanes with added channelization for westbound right turns at Greenwood Avenue N and for eastbound left turns at Dayton Avenue N.

N 155th Street is a minor arterial which serves the primary traffic flows between Westminster Way N and Aurora Avenue N. The intersection of N 155th Street/Westminster Way N is the primary access to Aurora Square. N 155th Street has sidewalks along both sides of the street.

Fremont Avenue N is a two-lane local street that runs along the western boundary of the CRA site from Westminster Way N to N 155th Street. Fremont Avenue N does not travel through the CRA site, but serves residential areas north of N 160th Street.

Figure 3-16. Transportation Study Area and CRA Boundaries

Source: KPG 2014

Study Intersections

There are eight intersections included in the analysis. These intersections are used to assess existing traffic operations. The study intersections include:

- N 160th Street/Greenwood Avenue N
- N 160th Street/Dayton Avenue N
- N 160th Street/Aurora Avenue N
- N 155th Street/Aurora Avenue N
- N 155th Street/Westminster Way N
- Westminster Way N/Dayton Avenue N
- Westminster Way N/Greenwood Avenue N
- N 145th Street/Greenwood Avenue N

All intersections are signal controlled with the exceptions of N 160th Street/Greenwood Avenue N, which has stop-signs on all approaches, and Westminster Way N/Greenwood Avenue N, which has a stop-control for the southbound approach on Greenwood Avenue N. Figure 3-17 shows the existing channelization at each study intersection.

Traffic Volumes

The City-provided traffic counts from 2011-2013 that show the turning movements at individual intersections. Table 3-6 summarizes the existing traffic volumes for the morning (AM) peak hour, afternoon (PM) peak hour and daily total. The peak hour volumes correspond to the highest volumes during the AM and PM commute hours. The AM peak hour occurred between 7:00 AM and 8:00 AM and the PM peak hour occurred between 5:00 PM and 6:00 PM.

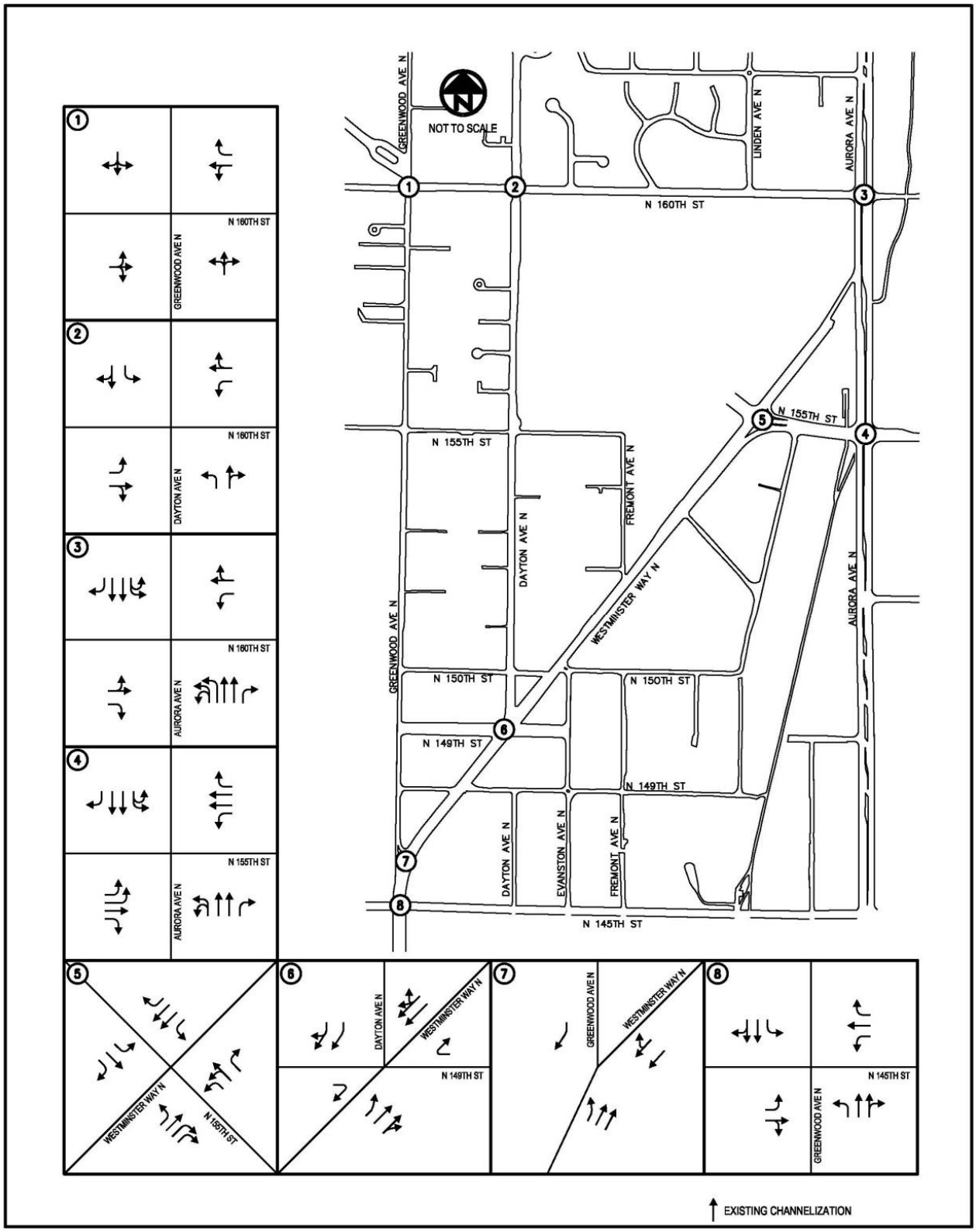
Table 3-6. Existing Traffic Volumes

Street Segment	Location	AM Peak Hour Volume	PM Peak Hour Volume	Daily Volume
Aurora Avenue N	North of N 155th Street	2,100	2,820	32,100
Westminster Way N	South of N 155th Street	680	1,180	20,300
Greenwood Avenue N	North of Westminster Way N	730	310	6,200
Dayton Avenue N	North of Westminster Way N	580	700	8,100
N 160th Street	West of Aurora Avenue N	690	720	7,400
N 155th Street	West of Aurora Avenue N	470	1,300	14,000

Source: City of Shoreline, 2011-2013

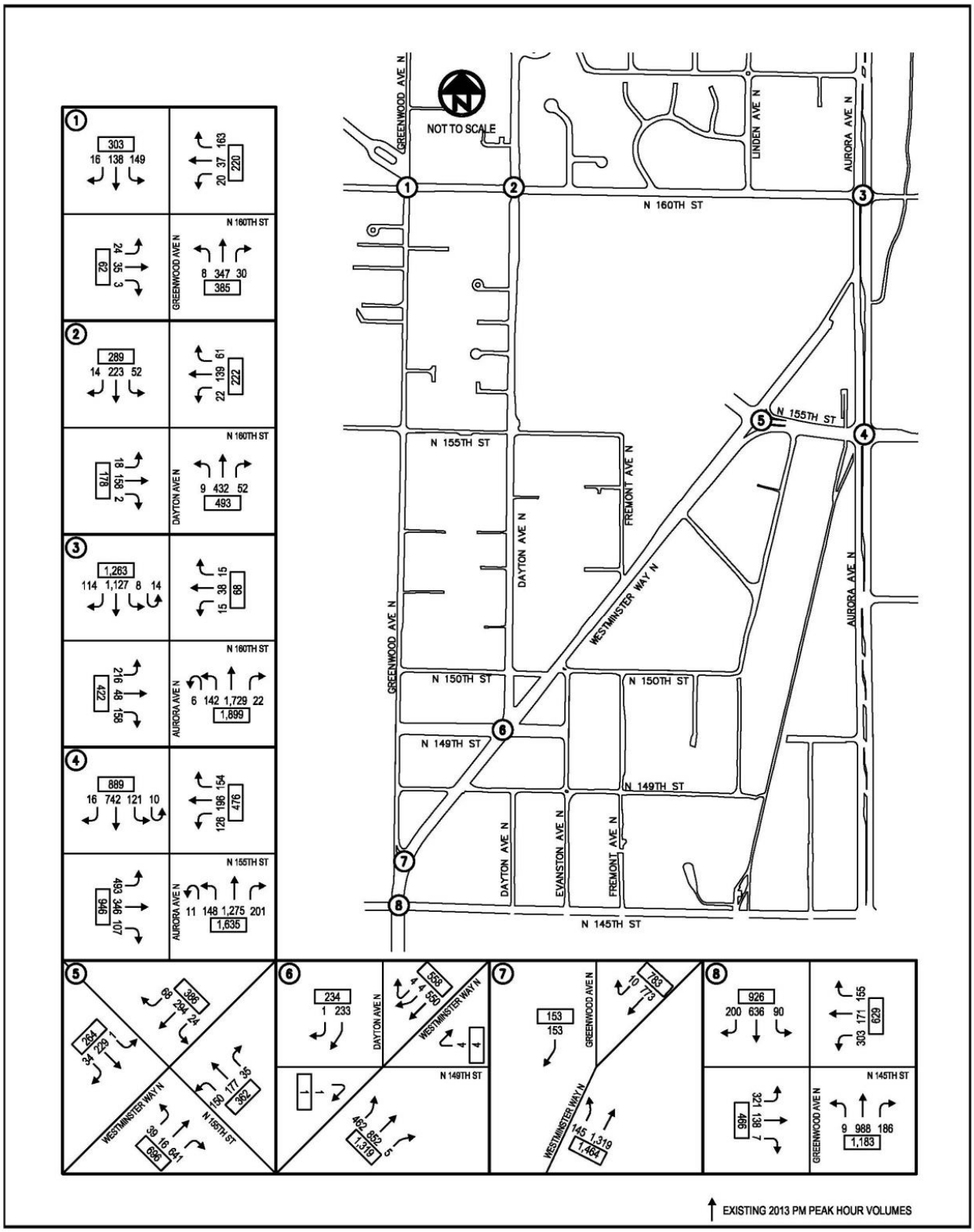
The PM peak hour traffic volumes are generally higher than the AM peak hour volumes, with the exception of Greenwood Avenue N, which has higher traffic volumes during the morning commute with many trips destined for the Shoreline Community College. Figure 3-18 shows the existing PM peak hour turning movement volumes at the eight study intersections.

Figure 3-17. Existing Study Intersection Channelization



Source: KPG 2014

Figure 3-18. Existing PM Peak Hour Volumes



Source: KPG 2014

Transit Facilities

King County Metro provides transit service on a number of streets in the study area including: Aurora Avenue N, Greenwood Avenue N, Dayton Avenue N, and N 160th Street. The three major routes are the Rapid Ride Line E, which provides frequent service along Aurora Avenue N with stops at N 160th Street and N 155th Street; Route 5 which provides frequent all-day service along Dayton Avenue N; and Route 345, which provides frequent service between the Northgate area of Seattle and Shoreline Community College. Table 3-7 summarizes the transit service in the study area.

Table 3-7. Transit Service

Route	Corridor Served	Operations	Frequency
Rapid Ride E Line – Downtown Seattle to Aurora Village	Aurora Avenue N	4 AM to 3 AM Weekday 4 AM to 3 AM Saturday 5 AM to 3 AM Sunday	8-12 minutes 10-20 minutes 15-30 minutes
5 – Downtown Seattle to Shoreline CC	Dayton Avenue N	5 AM to 2 AM Weekdays 6 AM to 2 AM Saturday 6 AM to 2 AM Sunday	15 minutes 15 minutes 30 minutes
304 – Downtown Seattle to Richmond Beach	Dayton Avenue	6 AM to 8 AM; 3 PM to 6 PM Weekdays	20-30 minutes
330 – Lake City to Shoreline CC	N 160th Street	7 AM to 7 PM Weekdays	60 minutes
331 – Kenmore to Shoreline CC	Greenwood Avenue N	6 AM to 8 PM Weekdays 8 AM to 7 PM Saturday 8 AM to 7 PM Sunday	30 minutes 30 minutes 60 minutes
345 – Northgate to Shoreline CC	Dayton Avenue N	7 AM to 11 PM Weekdays 7 AM to 10 PM Saturday 8 AM to 11 PM Sunday	20-30 minutes 30 minutes 60 minutes
355X – Downtown Seattle to Shoreline	Greenwood Avenue N	6 AM to 9 AM; ; 3 PM to 6 PM Weekdays	15 minutes

Source: King County Metro, September 2014.

Non-Motorized Facilities

The primary non-motorized facility within the city is the Interurban Trail. This regional trail connects to bicycle facilities to the south in Seattle and to the north in Edmonds. The Interurban Trails runs 3.25 miles, north-south, roughly paralleling Aurora Avenue N, and features elevated overcrossings of Aurora Avenue N at N 157th Street and N 155th Street, west of Aurora Avenue N.

Pedestrian facilities include sidewalks, crosswalks, and trails. There are complete sidewalks on both sides of N 160th Street, east of Dayton Avenue N and along Aurora Avenue N. Greenwood Avenue N, Dayton Avenue N and Westminster Way N lack continuous stretches of sidewalks. On these streets, there are sections without sidewalks where pedestrians must walk along paved shoulders or informal pathways adjacent to the roadway's edge.

Except for the Interurban Trail, there are no bicycle lanes or other designated bicycle facilities within the study area. The Washington State *Bicycle and Pedestrian Documentation Project* collected data on pedestrian and bicycle activity at several locations during 2010-2012. Table 3-8 shows the results of the bicycle and pedestrian counts within the study area during the morning peak two hours (7-9) and afternoon peak two hours (4-6).

Table 3-8. Bicycle and Pedestrian Activity

Intersection	2-Hour Peak Period	Bicycles			Pedestrians		
		2010	2011	2012	2010	2011	2012
Dayton Avenue N and N 160th Street	AM	12	14	--	78	84	--
	PM	8	16	14	68	72	119
Interurban Trail and N 155th Street	AM	45	42	59	40	33	38
	PM	48	49	106	102	46	103
15th Avenue NE and NE 155th Street	AM	11	13	16	37	36	19
	PM	24	15	--	33	44	--
Total	AM	68	69	89*	155	153	141*
	PM	80	80	135*	203	162	266*

*Where data was unavailable, the previous year's count was used to calculate a total.
Source: Washington State Bicycle and Pedestrian Documentation Project 2012.

Results of the count data show that over the three-year period the total bicycle activity in the area has increased by 30% in the AM period and 68% in the PM period. Pedestrian activity has decreased slightly during the AM period and increased by 30% in the PM period.

Traffic Operations Analysis

Level of Service (LOS) is used to determine the operation of roadways and intersections and to assess the impacts and mitigation from new development. LOS is based on an A-F scale with LOS A representing minimal delays and LOS F representing high levels of congestion. Table 3-9 summarizes the delay criteria used to determine LOS for signalized and stop-controlled intersections. LOS for signalized intersections is based on the average delay experienced by all vehicles traveling through an intersection. LOS for stop-controlled intersections is based on the average delay experienced by drivers on the stop-controlled approaches.

Table 3-9. Level of Service Criteria for Intersections

Level of Service	Average Delay per Vehicle (seconds/vehicle)	
	Signalized Intersections	Stop-Controlled Intersections
A	≤10	≤10
B	>10–20	>10–15
C	>20–35	>15–25
D	>35–55	>25–35
E	>55–80	>35–50
F	>80	>50

Source: 2010 Highway Capacity Manual

Level of Service Standard

The City of Shoreline has adopted a LOS D standard as the minimum acceptable standard for intersection operations at signalized and unsignalized intersecting arterials, with a supplemental requirement for Principal and Minor Arterial roadway segments that requires the ratio between the traffic volume and the estimated roadway capacity (volume-to-capacity) to operate at 0.90 or lower. There are four exceptions to the standard:

- Roadways designated by WSDOT as a Highways of Statewide Significance.[7]
- Legs of an intersection may exceed a volume-to-capacity ratio of 0.90 if the overall intersection operates at LOS D or better.
- Locations where widening of the roadway section is not feasible, or where there are substantial benefits from a safety improvement.
- Selected roadway segments as identified in the Transportation Element, where the volume-to-capacity ratio may exceed 0.90.

Existing Traffic Operations

The existing conditions analysis found that the study intersections operate at LOS D or better during both the AM and PM peak hours. Table 3-10 shows the AM and PM peak hour intersection LOS and delay in seconds.

Table 3-10. Existing Intersection Level of Service

			AM Peak Hour		PM Peak Hour	
ID	**Intersection**	**Control**	**LOS**	**Delay**	**LOS**	**Delay**
1	N 160th Street/Greenwood Avenue N	All-Way Stop	C	24	C	17
2	N 160th Street/Dayton Avenue N	Signal	A	9	A	8
3	N 160th Street/Aurora Avenue N	Signal	C	22	C	21
4	N 155th Street/Aurora Avenue N	Signal	D	47	D	53
5	N 155th Street/Westminster Way N	Signal	B	13	C	22
6	Westminster Way N/Dayton Avenue N	Signal	C	34	A	9
7	Westminster Way N/Greenwood Avenue N	Minor Stop	D	32	C	15
8	N 145th Street/Greenwood Avenue N	Signal	C	29	D	51

Source: 2010 Highway Capacity Manual

Table 3-11 shows the existing volume-to-capacity ratio for the study area streets classified as Principal Arterials or Minor Arterials during the PM peak hour. For existing conditions, all roadway segments in the study area meet the City's volume-to-capacity ratio standard of 0.90 or less.

[7] Aurora Avenue N is a Highway of Statewide Significance, and thus intersections along the route are exempt from the City's LOS D standard.

Table 3-11. Existing Roadway Volume-to-Capacity – PM Peak Hour

Street/Segment	Volume-to-Capacity Ratio		
N 160th Street	**Eastbound**	**Westbound**	**Meets V/C Standard?**
Greenwood Ave N to Dayton Ave N	0.27	0.28	Yes
Dayton Ave N to Aurora Ave N	0.26	0.18	Yes
Westminster Way N	**Northbound**	**Southbound**	**Meets V/C Standard?**
Greenwood Ave N to Dayton Ave N	0.82	0.49	Yes
Dayton Ave N to N 155th Street	0.54	0.35	Yes
N 155th Street to Aurora Ave N	0.07	0.25	Yes
N 155th Street	**Eastbound**	**Westbound**	**Meets V/C Standard?**
Westminster Way N to Aurora Ave N	0.39	0.15	Yes

Source: KPG and City of Shoreline Transportation Model.

Collision History

The City of Shoreline 2013 Annual Traffic Report reviews collision locations throughout the city. The report reviews a combination of City of Shoreline and WSDOT collision data for 2011 through 2013. The City defines locations with five or more collisions in a year or a three year crash rate exceeding 0.40 collisions per million entering vehicles as "High Crash Locations". These locations are reviewed to identify causes or contributing factors in the crash history and to identify potential opportunities to improve safety through engineering, enforcement, or education activities. The three High Crash Locations in the study area are shown in Table 3-12.

Table 3-12. High Crash Locations (2011 – 2013)

Intersection	# of Crashes	Crash Rate*
N 155th Street/Aurora Avenue N	9	0.16
N 155th Street/Westminster Way N	8	0.43
Dayton Avenue N/Westminster Way N	5	0.19

Source: City of Shoreline 2013 Annual Traffic Report
*Collisions per million entering vehicles

The intersection of N 155th Street/Westminster Way N meets the High Crash Location criteria for the number of crashes and for the crash rate. N 155th Street/Aurora Avenue N and Dayton Avenue N/Westminster Way N exceed the number of crashes criteria as defined by the City.

Significant Impacts

This section describes the impacts of the three alternatives on the transportation system. The land use and transportation network changes for the three alternatives are described below (full descriptions of these alternatives are found in Chapter 2):

- **Alternative 1 – No Action.** Assumes no change to the existing land use though full occupancy of existing buildings.

- **Alternative 2 – Phased Growth.** Assumes 500 new housing units within the study area and an additional mix of 250,000 square feet of office and retail space.
- **Alternative 3 – Planned Growth.** Assumes a higher level of development with 1,000 new housing units and a mix of 500,000 square feet of office and retail space.

Analysis Methodology

The analysis forecasted the 2030 PM peak-hour vehicle demand based on travel patterns, projected land use growth, and the traffic forecast from the City's 2011 *Transportation Master Plan*. Chapter 2 documents the assumed land uses for the No Action (Alternative 1), Phased Growth (Alternative 2), and Planned Growth (Alternative 3).

Analysis Period

The City of Shoreline uses the analysis of the afternoon commute hour (PM peak hour) to plan for and assess impacts related to future development. The peak hour for traffic in the area typically occurs between 5:00 PM and 6:00 PM; however, other roadways, such as N 160th Street, are affected by heavy traffic flows during the AM and mid-day hours due to traffic associated with the Shoreline Community College.

Traffic Forecasts

To estimate the future volumes, the analysis adjusted the 2030 forecasts from the *Transportation Master Plan* to reflect the No Action conditions. The analysis forecast the number of PM peak hour trips entering and exiting the site for each of the action alternatives. The analysis applied the *National Cooperative Highway Research Program (NCHRP) Report 684* methodology to estimate the total trips generated by the alternative. For the analysis of the Phased Growth and Planned Growth Alternatives, the new commercial development was assumed to be evenly split between retail and office space. Table 3-13 shows the inbound and outbound trips for each alternative during the PM peak hour.

Table 3-13. PM Peak Hour Trip Generation by Alternative

	No Action Alternative 1	Phased Growth Alternative 2	Planned Growth Alternative 3
Inbound Trips	553	933	1,313
Outbound Trips	737	1,159	1,581
Total Trips	1,289	2,092	2,894

Source: KPG 2014

Trip Distribution

The new vehicle trips were then assigned to the roadway network to assess the impact of the individual alternatives. Trips were assigned to the street network based on travel patterns and forecasts from the *Transportation Master Plan* using the following distribution:

Aurora Ave N south of the site	27%
Aurora Ave N north of the site	25%
Westminster Way N south of the site	19%
N 155th Street east of the site	15%
N 160th Street west of the site	9%
Other local trips	5%

Assumed Improvements

The No Action Alternative is consistent with the transportation projects identified in the City's *2014-2019 Transportation Improvement Plan* and *Transportation Master Plan*, but only assumes completion of improvements funded by the *2015-2020 Capital Improvement Plan*. The No Action Alternative includes the restriping N 160th Street from four to three lanes between Aurora Avenue N and Greenwood Avenue N in 2015.

Impacts Common to All Alternatives

Study area intersections and roadways would continue to see increased delays due to increases in background traffic growth made up of regional growth and growth in other areas of the City. Between 2014 and 2030, background traffic volumes are expected to increase between 15 and 25 percent. The growth in regional traffic volumes is expected to increase congestion and delays on major regional facilities including Aurora Avenue N.

Other impacts common to all alternatives include increased intersection delays during weekdays and weekends, as well as increased traffic related to seasonal and holiday shopping periods. Specific land uses may increase or decrease traffic impacts during peak periods. For example, a movie theater would generate higher evening and weekend traffic, where as an office use would result in higher levels of impact during morning and afternoon commute periods. All alternatives would have impacts to transit, pedestrian and bicycle travel, depending on the uses.

Alternative 1: No Action

The analysis of the No Action alternative assumed the existing lane geometry on traffic study area roadways with the exception of the planned improvements to reconfigure N 160th Street from four-lanes to three-lanes. The forecasted 2030 PM peak hour traffic volumes for the study intersections are shown in Figure 3-19. This analysis evaluates traffic operations assuming no change in the land uses within the Aurora Square study area though full building occupancy.

Intersection Operations

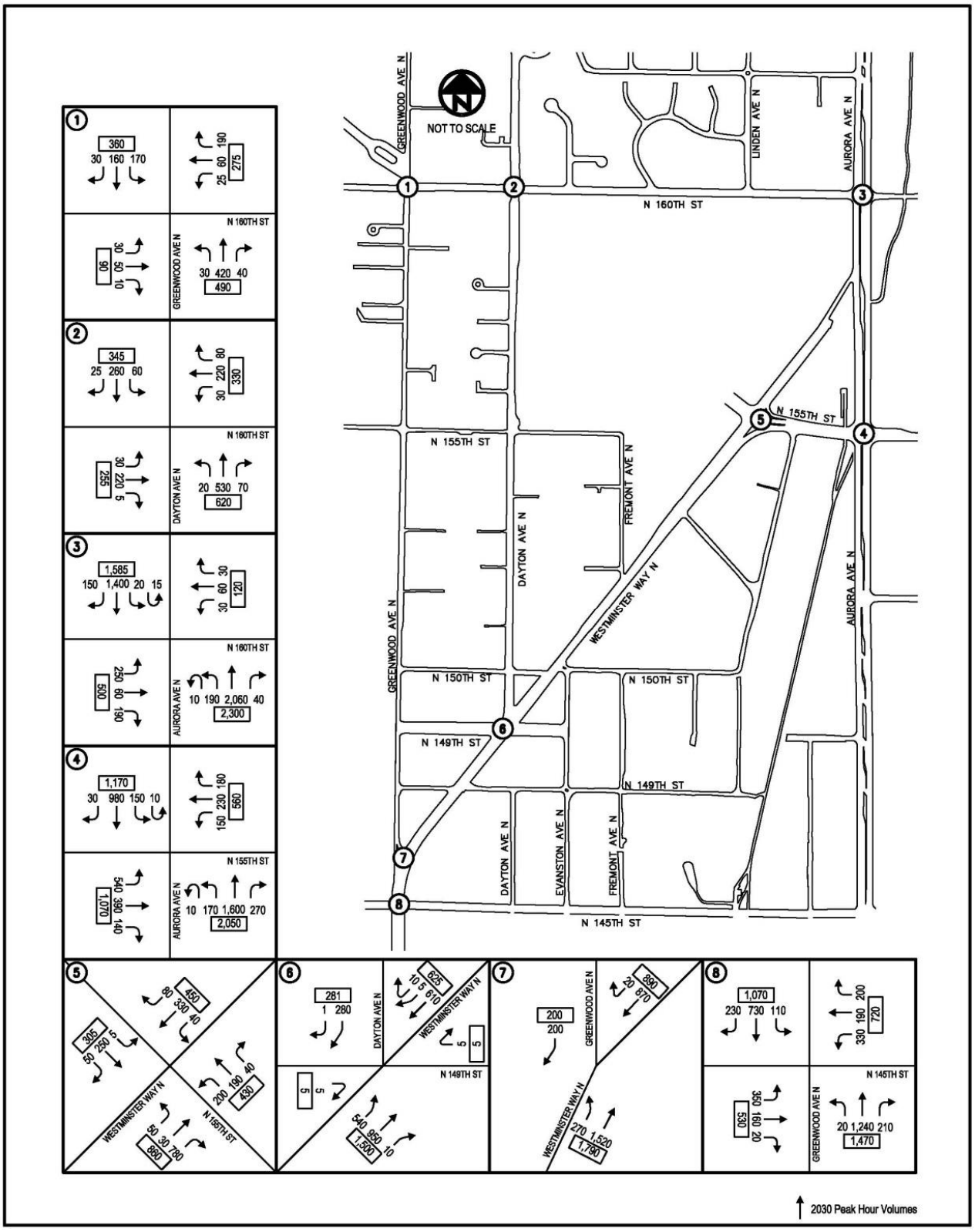
Table 3-14 reports the intersection LOS and delay of each study area intersections based on forecasted 2030 volumes for Alternative 1. During the 2030 PM peak hour, the N 155th Street/Aurora Avenue N intersection would operate at LOS F. Because Aurora Avenue N (SR 99) is a designated Highway of Statewide Significance, intersections on this facility are exempt from the City's LOS D standard. The intersection of N 145th Street/Greenwood Avenue N is outside the City of Shoreline city limits and is not subject to the City's LOS standard. All other study intersections are forecasted to operate at LOS D or better.

Table 3-14. Alternative 1: 2030 PM Peak Hour Intersection Level of Service

			PM Peak Hour	
ID	**Intersection**	**Control**	**LOS**	**Delay**
1	N 160th Street/Greenwood Avenue N	All-Way Stop	D	36
2	N 160th Street/Dayton Avenue N	Signal	B	11
3	N 160th Street/Aurora Avenue N	Signal	D	49
4	N 155th Street/Aurora Avenue N	Signal	F	97
5	N 155th Street/Westminster Way N	Signal	C	31
6	Westminster Way N/Dayton Avenue N	Signal	B	10
7	Westminster Way N/Greenwood Avenue N	Minor Stop	C	20
8	N 145th Street/Greenwood Avenue N	Signal	E	70

Source: 2010 Highway Capacity Manual

Figure 3-19. No Action Alternative: 2030 PM Peak Hour Volumes



Source: KPG 2014

Volume-to-Capacity Analysis

In addition to intersection LOS, the City's evaluation methodology uses volume-to-capacity on Principal and Minor Arterial roadway segments to determine the impacts of development. Table 3-15 shows the 2030 PM peak hour volume-to-capacity results for the No Action Alternative. The northbound Westminster Way N segment between Greenwood Avenue N and Dayton Avenue N exceeds a 0.90 volume-to-capacity ratio (0.94); however, the segment meets the standard because the intersection at Westminster Way N/Dayton Avenue N is forecast to operate at LOS B.

Table 3-15. Alternative 1: Roadway Volume-to-Capacity – 2030 PM Peak Hour

Street/Segment	Volume-to-Capacity Ratio		
N 160th Street	**Eastbound**	**Westbound**	**Meets V/C Standard?**
Greenwood Ave N to Dayton Ave N	0.34	0.36	Yes
Dayton Ave N to Aurora Ave N	0.31	0.25	Yes
Westminster Way N	**Northbound**	**Southbound**	**Meets V/C Standard?**
Greenwood Ave N to Dayton Ave N	0.94	0.56	Yes
Dayton Ave N to N 155th Street	0.60	0.39	Yes
N 155th Street to Aurora Ave N	0.09	0.28	Yes
N 155th Street	**Eastbound**	**Westbound**	**Meets V/C Standard?**
Westminster Way N to Aurora Ave N	0.45	0.18	Yes

Source: KPG and City of Shoreline Transportation Model.

Traffic Operations Impacts

The intersections of N 155th Street/Aurora Avenue N and N 160th Street/Aurora Avenue N are part of the Highways of Statewide Significance system and therefore are exempt from the City of Shoreline's LOS standard. The northbound segment of Westminster Way N between Greenwood Avenue N and Dayton Avenue N exceeds the 0.90 volume-to-capacity ratio (0.94); however, the Westminster Way N/Dayton Avenue N intersection is forecast to meet the City's intersection LOS standard, exempting the location from the City's volume-to-capacity standard. All other intersections and roadways meet the City's standards.

Based on the analysis traffic analysis results, Alternative 1 does not generate significant transportation impacts.

Construction Impacts

No construction impacts are assumed with the No Action Alternative.

Transit Impacts

Transit ridership is expected to increase in proportion to the area's population growth. However, lack of pedestrian improvements would likely impact these numbers. Development by the Shoreline Community College under its 2006 Master Development Plan would be a factor in the growth in transit ridership in the area.

Pedestrian and Bicycle Impacts

Alternative 1 includes new bicycle lanes on N 160th Street as a result of restriping this facility from 4 lanes to 3 lanes. No major pedestrian improvements would be constructed under this alternative. Growth in pedestrians and bicyclists would be proportionate to area population growth.

Action Alternatives 2 and 3

The two action scenarios include frontage, roadway and intersection improvements to support the development of the CRA and to enhance vehicle, pedestrian and bicycle access. Improvements would include sidewalks, bicycle facilities, modifications to lane channelization, signal timing and phasing changes, and other operation and safety improvements.

Frontage Improvements

The City has developed specific cross sections for City streets describing the travel lanes, sidewalk widths, bicycle facilities, and on-street parking. When a property redevelops and applies for permits, frontage improvements (or in-lieu contributions) and right-of-way dedications if needed are required by the City of Shoreline Municipal Code (20.70). In order to improve traffic operations, non-motorized travel, and encourage the redevelopment of the Aurora Square CRA, customized designs were developed for N 160th Street, Westminster Way N, N 155th Street, and Aurora Avenue N. These improvements are part of the Planned Action Ordinance and are assumed as part of Alternatives 2 and 3. These frontage improvements include:

- **N 160th Street between Dayton Avenue N and Aurora Avenue N**. The planned improvements include three travel lanes, sidewalks, and a two-way cycle track facility on the south side of the street.

- **Westminster Way N between N 155th Street and Aurora Avenue N.** The planned improvements would reconfigure this segment of Westminster Way N to a 2-lane roadway with sidewalks and on-street parking for adjacent land uses. The south segment of Westminster Way N would be parallel parking and the north segment would be angled parking.

- **Westminster Way N between Fremont Avenue N and N 155th Street.** This segment of Westminster Way N would remain a 4-5 lane facility. Frontage improvements would include improved sidewalks and revised intersection and roadway channelization.

- **N 155th Street between Westminster Way N and Aurora Avenue N**. Frontage improvements would include improved sidewalks and revised intersection and roadway channelization.

- **Aurora Avenue N between N 160th Street and Westminster Way N**. Add a two-way bicycle facility behind the existing sidewalk along Aurora Avenue N to connect the Interurban Trail to the planned cycle track on N 160th Street.

Access Improvements

The street designs developed for the Aurora Square CRA include improvements to N 160th Street, Westminster Way N and N 155th Street that will enhance access to the site. The following access improvements were included in the action alternatives.

- N 155th Street/Westminster Way N intersection provides the main access to the Aurora Square site. With redevelopment of the CRA properties, frontage improvements to Westminster Way N and N 155th Street would rebuild the intersection to improve access to Aurora Square, accommodate regional vehicle travel, shorten pedestrian crossing distances, and reduce the number of lanes on northeast approach at the intersection. A multi-lane roundabout was analyzed at this location, but was not selected due to the large physical footprint and potential for eastbound vehicle queues from Aurora Avenue N to block roundabout circulation.

- Close the southbound Aurora Avenue N right-turn "slip lane" to Westminster Way N and construct a new roadway connection at N 156th Street/Aurora Avenue N that would connect Westminster Way N and Aurora Avenue N. This access would be limited to southbound right turns inbound and eastbound right turns outbound.

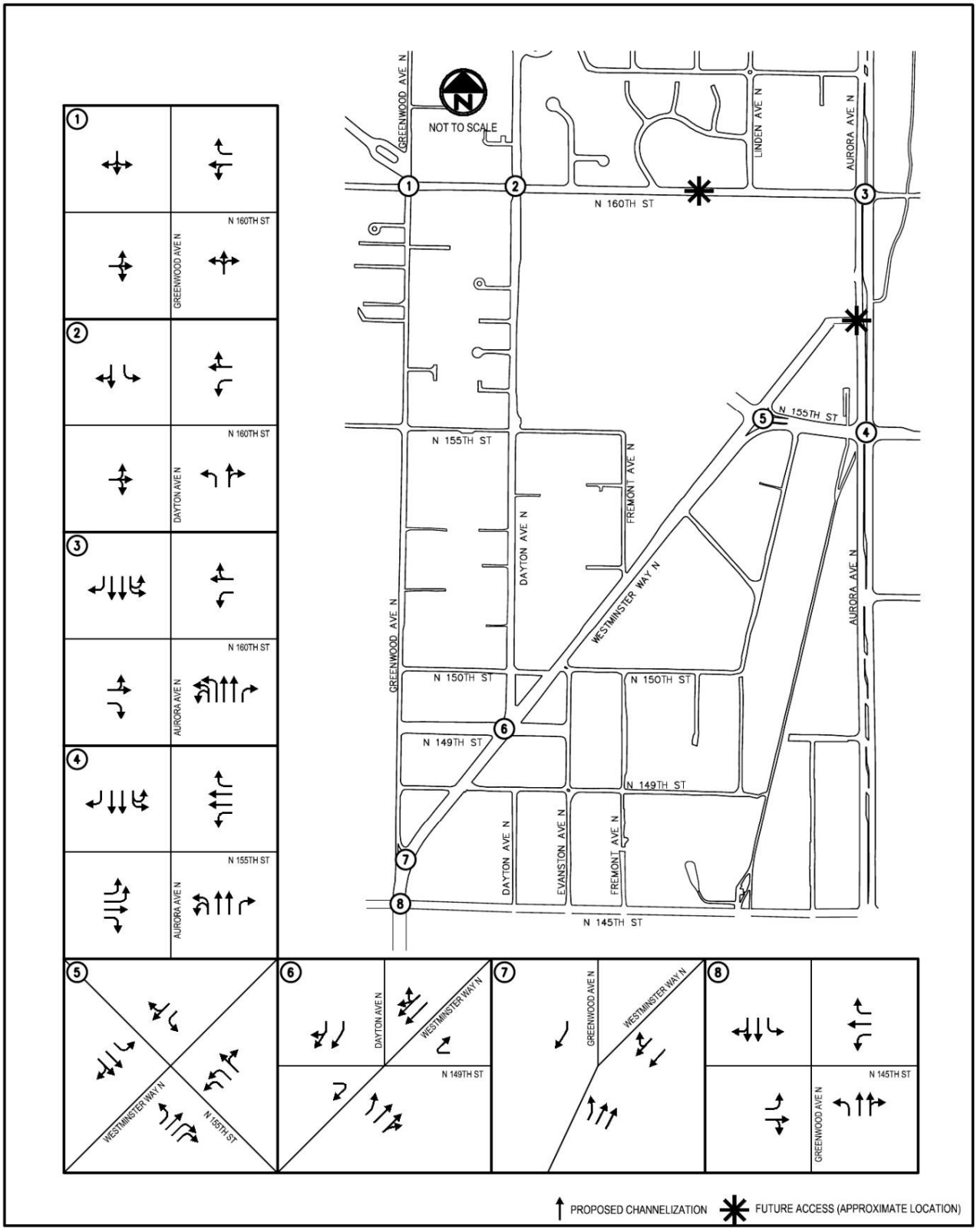
- Construct a new intersection along N 160th Street to provide access to the CRA. Preliminary CRA plans include a new north/south internal street that will form the primary connection between Westminster Way N and N 160th Street. The design of this north/south internal street would determine the location of the new intersection and its relationship to the intersections at Fremont Avenue N and Linden Avenue N. The redeveloping CRA properties may be required to construct a signal at the new intersection if signal warrants are met per the Manual for Uniform Traffic Control Devices.

Figure 3-20 shows the 2030 intersection channelization included in the analysis of the action alternatives.

Alternative 2: Phased Growth

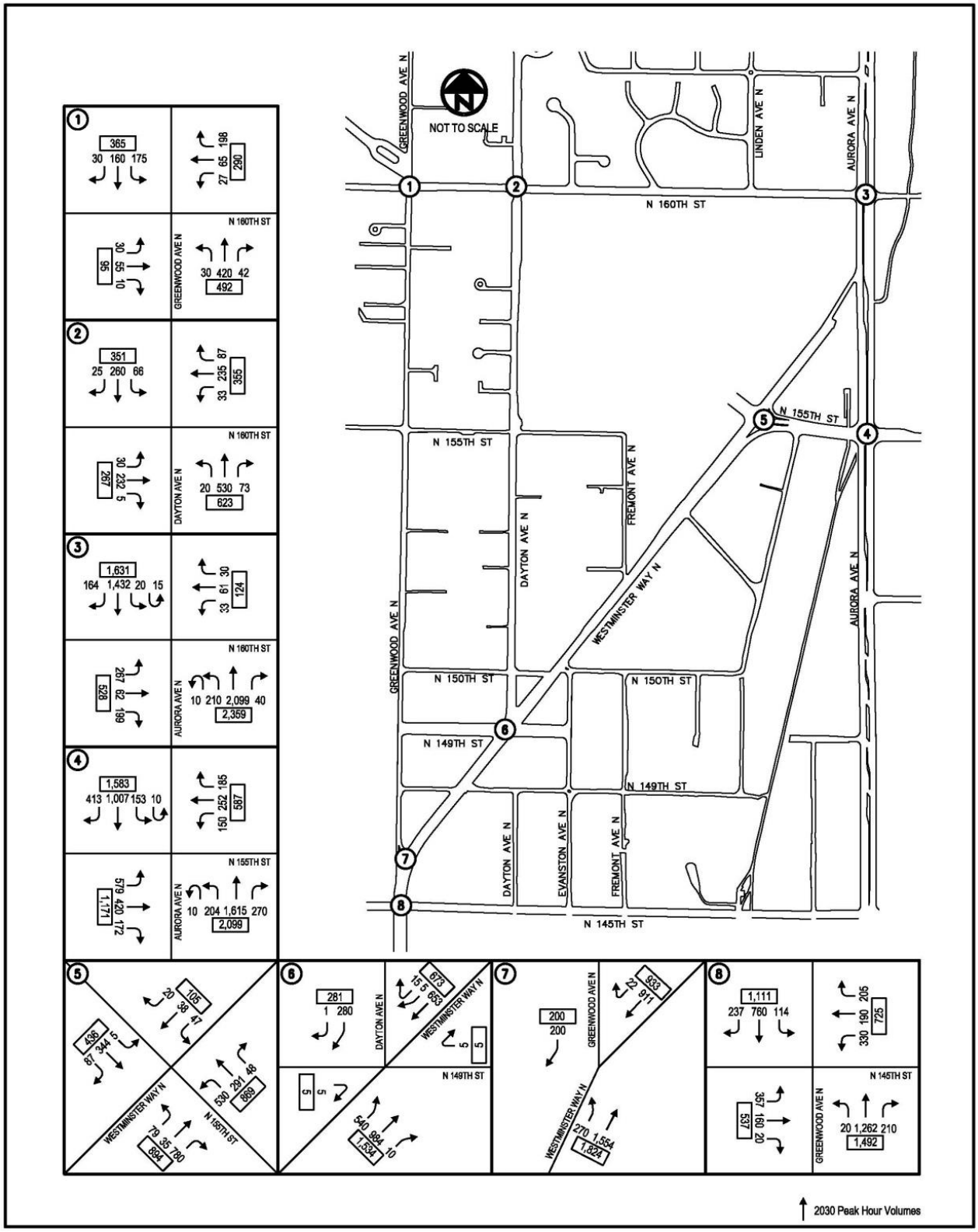
The analysis of the Phased Growth alternative assumes 500 new housing units and an additional 250,000 square feet of office and retail space. The Alternative 2 forecasted 2030 PM peak hour traffic volumes are shown in Figure 3-21**.**

Figure 3-20. Future Channelization – Action Alternatives



Source: KPG 2014

Figure 3-21. Alternative 2: 2030 PM Peak Hour Volumes



Source: KPG 2014

Intersection Operations

Table 3-16 reports the intersection LOS and delay of each study area intersections based on forecasted 2030 volumes for Alternative 2. During the 2030 PM peak hour, the N 155th Street/Aurora Avenue N intersection would operate at LOS F and the N 160th Street/Aurora Avenue N intersection would operate LOS E. Because Aurora Avenue N (SR 99) is a designated Highway of Statewide Significance, these intersections are exempt from the City's LOS D standard. The intersection of N 145th Street/Greenwood Avenue N is outside the City of Shoreline city limits and is not subject to the City's LOS standard. All other study intersections are forecasted to operate at LOS D or better.

Table 3-16. Alternative 2: 2030 PM Peak Hour Intersection Level of Service

ID	Intersection	Control	PM Peak Hour LOS	PM Peak Hour Delay
1	N 160th Street/Greenwood Avenue N	All-Way Stop	D	31
2	N 160th Street/Dayton Avenue N	Signal	B	11
3	N 160th Street/Aurora Avenue N	Signal	E	62
4	N 155th Street/Aurora Avenue N	Signal	F	109
5	N 155th Street/Westminster Way N	Signal	C	30
6	Dayton Avenue N/Westminster Way N	Signal	B	10
7	Greenwood Avenue N/Westminster Way N	Minor Stop	C	21
8	N 145th Street/Greenwood Avenue N	Signal	E	71

Source: 2010 Highway Capacity Manual, KPG 2014

Volume-to-Capacity Analysis

The City's evaluation methodology uses volume-to-capacity to determine the impacts of development. Table 3-17 shows the results of the 2030 PM peak hour volume-to-capacity evaluation for Alternative 2. The northbound Westminster Way N segment between Greenwood Avenue N and Dayton Avenue N exceeds a 0.90 volume-to-capacity ratio (0.97); however, the segment meets the standard because the intersection at Dayton Avenue N/Westminster Way N is forecast to operate at LOS B.

Table 3-17. Alternative 2: Roadway Volume-to-Capacity – 2030 PM Peak Hour

Street/Segment	Volume-to-Capacity Ratio		
N 160th Street	**Eastbound**	**Westbound**	**Meets V/C Standard?**
Greenwood Ave N to Dayton Ave N	0.34	0.36	Yes
Dayton Ave N to Aurora Ave N	0.33	0.27	Yes
Westminster Way N	**Northbound**	**Southbound**	**Meets V/C Standard?**
Greenwood Ave N to Dayton Ave N	0.97	0.59	Yes
Dayton Ave N to N 155th Street	0.62	0.42	Yes
N 155th Street to Aurora Ave N	0.11	0.13	Yes
N 155th Street	**Eastbound**	**Westbound**	**Meets V/C Standard?**
Westminster Way N to Aurora Ave N	0.49	0.36	Yes

Source: KPG and City of Shoreline Transportation Model.

Traffic Operations Impacts

The intersections of N 155th Street/Aurora Avenue N and N 160th Street/Aurora Avenue N are part of the Highways of Statewide Significance system and therefore are exempt from the City of Shoreline's LOS standard. Although the northbound segment of Westminster Way N between Greenwood Avenue N and Dayton Avenue N exceeds the 0.90 volume-to-capacity ratio standard, the Dayton Avenue N/Westminster Way N intersection meets the City's intersection LOS standard, exempting the location from the City's volume-to-capacity standard. All other intersections and roadways would meet the City's standards under Alternative 2.

Based on the analysis traffic analysis results, Alternative 2 does not generate significant transportation impacts.

Construction Impacts

Alternative 2 changes the circulation and access patterns for traffic within the study area, particularly in the area surrounding the N 155th Street/Westminster Way N intersection. Transportation impacts for the action alternatives due to construction activity would likely be moderate. Temporary lane closures or an entire road closure may occur on Westminster Way N between N 155th Street and Aurora Avenue N in order to modify this segment to create a two-lane street with parking. Temporary lane closures or other impacts to vehicle and pedestrian traffic may occur during the construction of the revised intersection at N 155th Street/Westminster Way N, or as part of lane and sidewalk improvements on Westminster Way N, between Greenwood Avenue N and N 155th Street, N 155th Street between Westminster Way N and Aurora Avenue N. Appropriate construction management, including development of detour routes, and appropriate phasing of development plans should be considered to mitigate vehicle, transit, and non-motorized impacts during construction.

Transit Impacts

Transit ridership would be increased under Alternative 2. The addition of residential and office land uses would result in increased demand for transit services particularly during commute hours. Access to transit would be improved by non-motorized internal connections within the CRA site and street frontage improvements that would occur with redevelopment.

Pedestrian and Bicycle Impacts

With redevelopment of the CRA, Alternative 2 would improve pedestrian and bicycle facilities within the CRA site and along the street frontages. The frontage improvements for N 160th Street will include a two-way cycle track on the south-side of the street.

Alternative 3: Planned Growth

The analysis of the Planned Growth alternative assumes the land use changes within the Aurora Square CRA and the previously described roadway and intersection improvements to Westminster Way N, N 160th Street, and N 155th Street. The forecasted 2030 PM peak hour traffic volumes for the study intersections are shown in Figure 3-22**.**

Intersection Operations

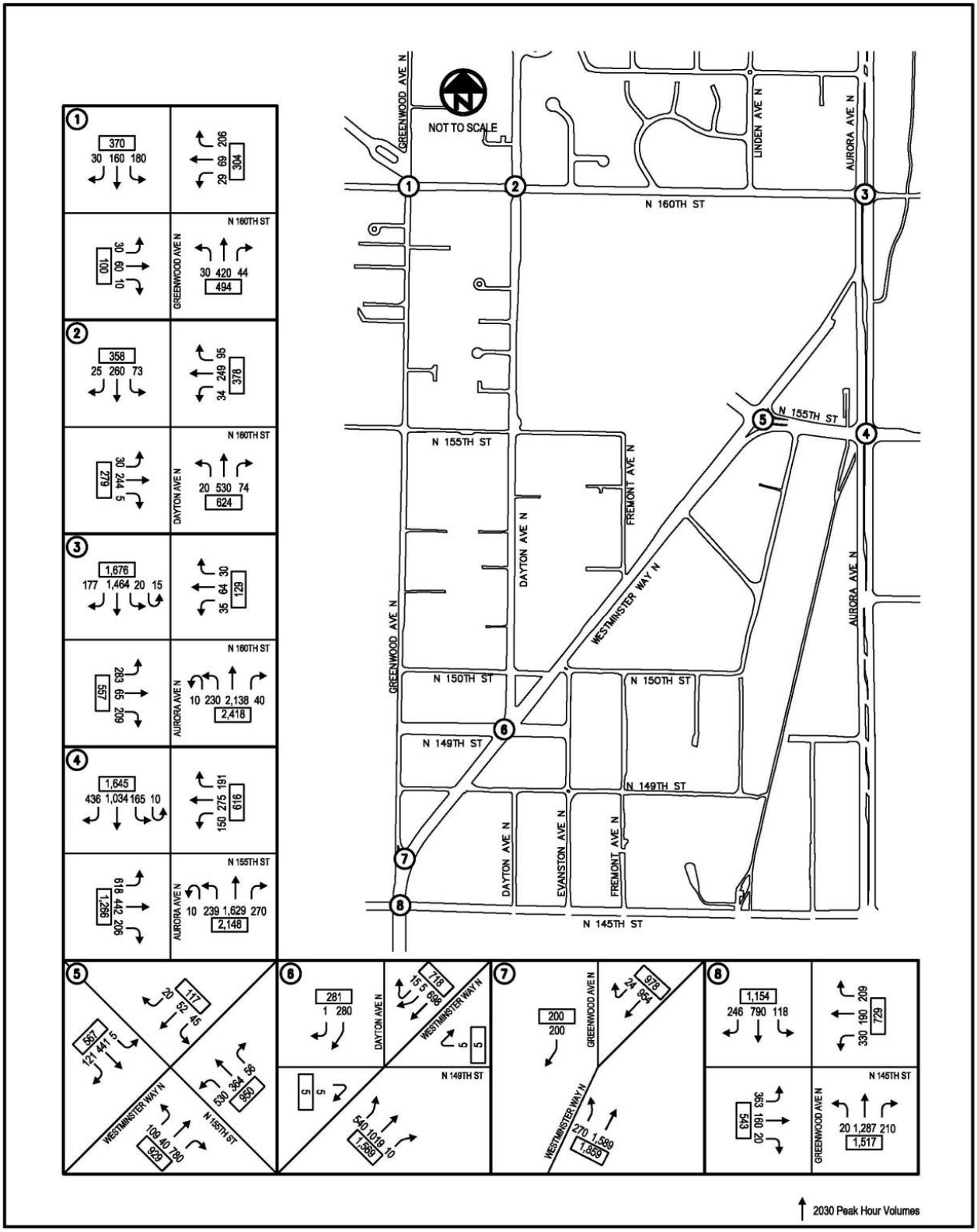
Table 3-18 reports the intersection LOS and delay of each study area intersections based on forecasted 2030 volumes for Alternative 3. During the 2030 PM peak hour, the N 155th Street/Aurora Avenue N intersection would operate at LOS F and the N 160th Street/Aurora Avenue N intersection would operate LOS E. Because Aurora Avenue N (SR 99) is a designated Highway of Statewide Significance, these intersections are exempt from the City's LOS D standard. The intersection of N 145th Street/Greenwood Avenue N is outside the City of Shoreline city limits and is not subject to the City's LOS standard. All other study intersections are forecasted to operate at LOS D or better.

Table 3-18. Alternative 3: 2030 PM Peak Hour Intersection Level of Service

			PM Peak Hour	
ID	Intersection	Control	LOS	Delay
1	N 160th Street/Greenwood Avenue N	All-Way Stop	D	34
2	N 160th Street/Dayton Avenue N	Signal	B	12
3	N 160th Street/Aurora Avenue N	Signal	E	70
4	N 155th Street/Aurora Avenue N	Signal	F	119
5	N 155th Street/Westminster Way N	Signal	C	30
6	Westminster Way N/Dayton Avenue N	Signal	B	11
7	Westminster Way N/Greenwood Avenue N	Minor Stop	C	22
8	N 145th Street/Greenwood Avenue N	Signal	E	73

Source: 2010 Highway Capacity Manual

Figure 3-22. Alternative 3: 2030 PM Peak Hour Volumes



Source: KPG 2014

Volume-to-Capacity Analysis

The City's evaluation methodology uses volume-to-capacity to determine the impacts of development. Table 3-19 shows the results of the 2030 PM peak hour volume-to-capacity evaluation for Alternative 3. The northbound Westminster Way N segment between Greenwood Avenue N and Dayton Avenue N exceeds a 0.90 volume-to-capacity ratio (0.98); however, the segment meets the standard because the intersection at Dayton Avenue N/Westminster Way N operates at LOS B.

Table 3-19. Alternative 3 Roadway Volume-to-Capacity – 2030 PM Peak Hour

Street/Segment	Volume-to-Capacity Ratio		
N 160th Street	**Eastbound**	**Westbound**	**Meets V/C Standard?**
Greenwood Ave N to Dayton Ave N	0.36	0.38	Yes
Dayton Ave N to Aurora Ave N	0.35	0.29	Yes
Westminster Way N	**Northbound**	**Southbound**	**Meets V/C Standard?**
Greenwood Ave N to Dayton Ave N	0.98	0.61	Yes
Dayton Ave N to N 155th Street	0.64	0.45	Yes
N 155th Street to Aurora Ave N	0.13	0.15	Yes
N 155th Street	**Eastbound**	**Westbound**	**Meets V/C Standard?**
Westminster Way N to Aurora Ave N	0.53	0.40	Yes

Source: KPG and City of Shoreline 2030 Transportation Model

Traffic Operations Impacts

The intersections of N 155th Street/Aurora Avenue N and N 160th Street/Aurora Avenue N are part of the Highways of Statewide Significance system and therefore are exempt from the City of Shoreline's LOS standard. The northbound segment of Westminster Way N between Greenwood Avenue N and Dayton Avenue N exceeds the 0.90 volume-to-capacity ratio (0.98); however, the Dayton Avenue N/Westminster Way N intersection meets the City's intersection LOS standard, exempting the location from the City's volume-to-capacity standard. All other intersections and roadways meet the City's standards.

Based on the analysis traffic analysis results, Alternative3 does not generate significant transportation impacts.

Construction Impacts

Alternative 3 changes the circulation and access patterns for traffic within the study area, particularly in the area surrounding the N 155th Street/Westminster Way N intersection. Transportation impacts for the alternative due to construction activity would likely be moderate. Temporary lane closures or an entire road closure may occur on Westminster Way N between N 155th Street and Aurora Avenue N in order to modify this segment to create a two-lane parking street. Temporary lane closures or other impacts to vehicle and pedestrian traffic may occur during the construction of the revised intersection at N 155th Street/Westminster Way N, or as part of lane and sidewalk improvements on Westminster Way N, between Greenwood Avenue N and N 155th Street, N 155th Street between Westminster Way N and Aurora Avenue N. Appropriate construction management, including development of detour routes, and appropriate phasing of development plans should be considered to mitigate vehicle, transit, and non-motorized impacts during construction.

Transit Impacts

Transit ridership would be increased under Alternative 3. The addition of residential and office land uses would result in increased demand for transit services particularly during commute hours. Access to transit would be improved by non-motorized internal connections within the CRA site and street frontage improvements that would occur with redevelopment.

Pedestrian and Bicycle Impacts

With redevelopment of the CRA, Alternative 3 would improve pedestrian and bicycle facilities within the CRA site and along the street frontages. The frontage improvements for N 160th Street will include a two-way cycle track on the south-side of the street.

Mitigation Measures

Identified impacts due to the changes in land uses and to the transportation system require mitigation measures to alleviate the direct impacts from development. This section reviews the transportation impacts for each alternative and proposes actions or capacity improvements to address these impacts.

Frontage Improvements

When a property redevelops and applies for permits, frontage improvements (or in-lieu contributions) and right-of-way dedications if needed are required by the City of Shoreline Municipal Code (SMC 20.70). If right-of-way (or an easement) is needed, it also would be required/dedicated by the development to the City. The City has developed specific cross sections for City streets describing the travel lanes, sidewalk widths, bicycle facilities, and on-street parking. As part of the Aurora Square Planned Action EIS, customized designs were developed for 160th Street, Westminster Way N, N 155th Street, and Aurora Avenue N (see Appendix B). The Aurora Square CRA frontage improvements are described in detail under the Action Alternatives 2 and 3 section. Other frontage improvements would follow the City's standard designs (e.g. west and south borders with Dayton, Fremont, and 155th along WSDOT area). The City may determine an allocation of responsibility/cost for required improvements to future redevelopment proposals proportionate to the development size or impact.

Access Improvements

Preliminary CRA plans include a new north/south internal street that will form the primary connection between Westminster Way N and N 160th Street. This north/south internal street would add a new intersection at N 160th Street. The redeveloping CRA properties will need to analyze the traffic operations of the new intersection and may be required to construct a signal at the new intersection if signal warrants are met per the Manual for Uniform Traffic Control Devices. The design of the internal street would determine the location of the new intersection and its relationship to the intersections at Fremont Avenue N and Linden Avenue N.

Concurrency

Future proposals would meet the transportation concurrency requirements and the Level of Service (LOS) thresholds established in SMC 20.60.140 Adequate Streets.

Impact Fees

The City of Shoreline adopted Transportation Impact Fees effective January 1, 2015 per Shoreline Municipal Code (SMC) Chapter 12.40. Payment of the Transportation Impact Fees is designed to mitigate city-wide transportation impacts that will result from residential and non-residential growth within Shoreline. As new development occurs within the CRA, each development would be assessed a per trip fee based on the number of new trips added to the street network.

Commute Trip Reduction

The City has adopted a Commute Trips Reduction Program (SMC 14.10) consistent with State Requirements under RCW 70.94.527. Within the study area, the Washington State Department of Transportation offices are required to implement commute trip reduction programs to encourage employees and students to reduce commute trips by single-occupant vehicles. Any new employers

within the Aurora Square CRA with 100 or more employees arriving between 6:00 AM and 9:00 AM would be required to prepare and submit a Commute Trip Reduction Program to the City. Actions could include provision of priority parking for carpools, transit pass programs, and subsidies or other incentives for non-single-occupant, transit, or non-motorized commuters. The City's continued implementation of this program will reduce the number of vehicle trips generated under the alternatives.

Internal Pedestrian Access

Chapter 20.60.150 of the SMC requires new development to provide pedestrian facilities that connect street right-of-way to building entrances, safe access to parking areas, and connections connecting commercial developments. As part of its development review process, the City will ensure the implementation of these requirements to encourage walking and transit use.

Other Potential Mitigation Measures

The Aurora Square CRA would benefit from additional left-turn capacity for northbound traffic on Aurora Avenue N. Potential options include adding a second northbound left-turn lane at the N 155th Street/Aurora Avenue N intersection or by adding a mid-block left-turn lane on northbound Aurora Avenue N.

The option of adding a second left-turn lane at N 155th Street/Aurora Avenue N would benefit the Aurora Square CRA and regional traffic flows by increasing intersection capacity and reducing delay. The addition of the second northbound left-turn lane would reduce overall intersection delay from 111 seconds to 107 seconds for Alternative 2 and from 123 seconds to 114 seconds for Alternative 3 during the 2030 PM peak hour. To accommodate the additional left-turn lane, the north and south intersection approaches would be widened, resulting in longer east-west pedestrian crossing distances, a narrowed or removed landscaped median, and potential impacts to sidewalks.

The option of adding a mid-block left-turn lane from northbound Aurora Avenue N into the site would divert a portion of the traffic entering Aurora Square from the intersections of N 155th Street/Aurora Avenue N and N 160th Street/Aurora Avenue N.

The City should work with the Aurora Square CRA property owners and WSDOT to assess the benefits and trade-offs of adding northbound capacity at these locations.

Significant Unavoidable Adverse Impacts

Implementation of Alternative 2 or Alternative 3 would result in increased traffic in the study area. Forecasts of future traffic operations on the proposed transportation network show that the Aurora Square CRA will meet concurrency standards for intersection LOS and roadway volume-to-capacity ratios. The proposed transportation improvements on Westminster Way N, N 155th Street and N 160th Street associated with the two action alternatives would result in temporary impacts during the construction of these facilities.

3.4 Stormwater

The purpose of this section is to describe current stormwater drainage conditions within the study area and to assess the potential effects from stormwater drainage that could result from adoption of the two action alternatives.

Additionally, this section explores regional stormwater facility concepts that could be implemented to satisfy stormwater flow control requirements triggered by redevelopment in the Aurora Square Community Renewal Area, in lieu of constructing flow control facilities for individual development project.

Degradation of water quality and increased flooding are common occurrences resulting from development of drainage basins, and are directly linked to the increase in impervious surface area that accompany development (Booth et al. 2001; Booth 2000). However, in the case of redevelopment, water quality and control of discharge can be improved because redevelopment typically includes implementation of modern stormwater BMPs; whereas, stormwater runoff from existing developed areas often has little or no runoff treatment.

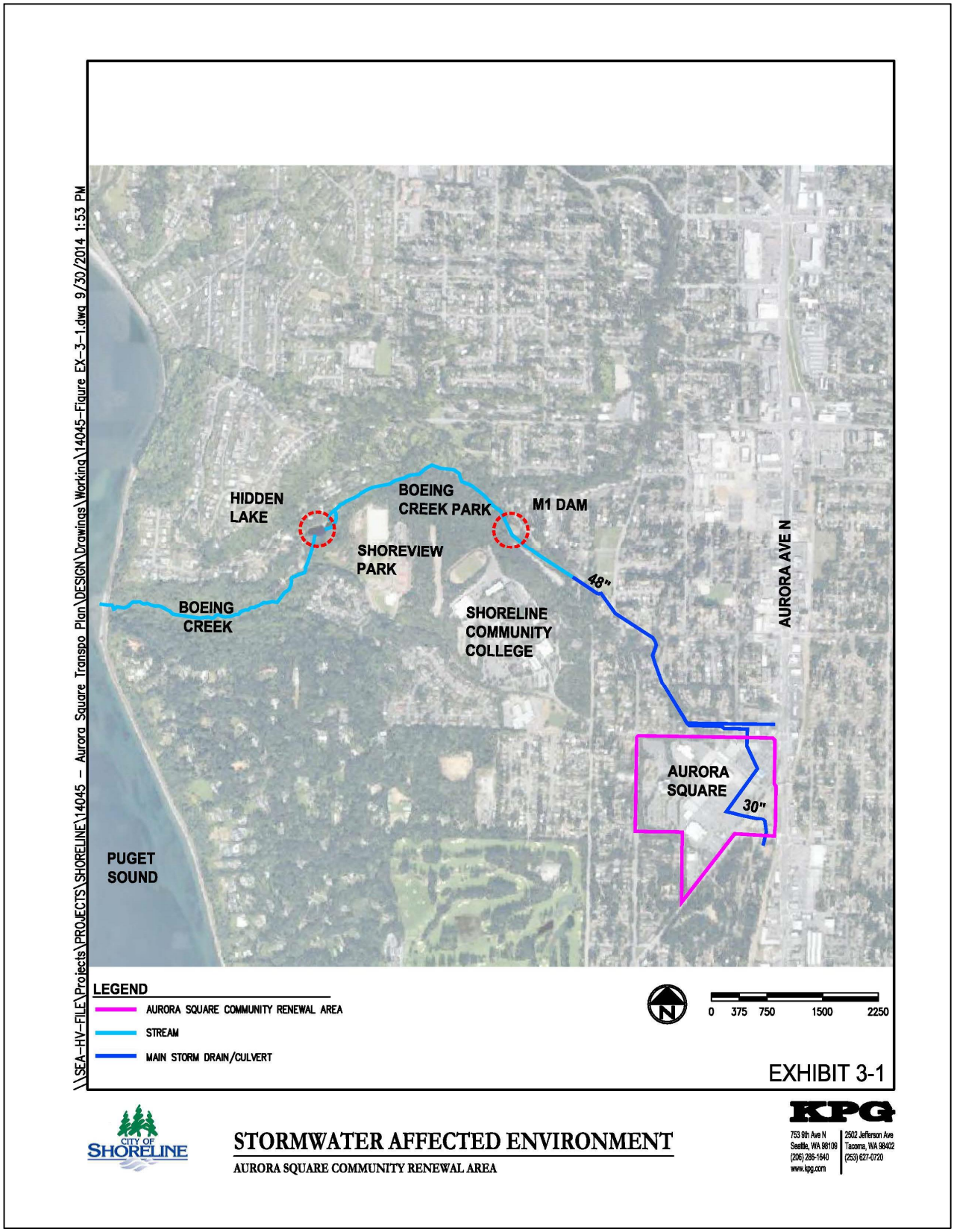
Both planned action alternatives are expected to improve stormwater conditions downstream from the study area in comparison to existing conditions. This improvement would include both an increase in the quality of stormwater as well as reductions in peak runoff rates. These improvements are expected because current stormwater management requirements adopted by the City would require stormwater mitigation for all new and replaced impervious surfaces resulting from redevelopment. For water quality, existing pollution-generating impervious surfaces, such as parking lots, would be required to be retrofitted with treatment best management practices (BMPs) if they are replaced as part of the redevelopment. Flow control requirements would apply to all new and replaced impervious surfaces including parking lots, buildings, and sidewalks. In addition to standard runoff treatment and flow control BMPs, Low Impact Development (LID) BMPs such as pervious pavement and bioretention would be required wherever feasible.

Stormwater impacts resulting from the planned action alternatives were analyzed at a programmatic level. The exact configuration and timing of future redevelopment is unknown, so the alternatives could not be analyzed for specific impacts. However, since stormwater management requirements would be applied to each redevelopment project consistently based on areas of new and replaced impervious surfaces, projections were made as to what these areas might be for each planned action alternative in order to make general projections of how future redevelopment under each alternative could affect stormwater quality, flow rates, and volumes.

Affected Environment

The affected environment includes the entire study area (See Chapter 2, Figure 2-1) as well as the water bodies that receive stormwater runoff from the study area. The study area is located in the Boeing Creek Basin, which is within Water Resources Inventory Area (WRIA) 8. WRIAs are Ecology administrative areas that follow watershed boundaries. As shown in Figure 3-23, the primary surface waters within the study area include Boeing Creek and Hidden Lake. The study area drains into a 48-inch diameter piped drainage system that discharges to Boeing Creek approximately ½ mile downstream. Hidden Lake is located along Boeing Creek approximately 1.3 miles downstream from the study area. Boeing Creek discharges to Puget Sound approximately 0.7 mile downstream from Hidden Lake.

Figure 3-23. Stormwater Affected Environment Map



Source: KPG 2014

The *Boeing Creek Basin Plan* was prepared in 2013 by the City of Shoreline and a consultant team consisting of Windward Environmental LLC, Osborn Consulting Inc. and The Watershed Company. The purpose of the plan was to "provide a comprehensive representation of the natural and built infrastructure in the basin so that the City of Shoreline can manage existing issues and minimize future problems using its stormwater management resources." This plan provides a valuable source of information on the affected stormwater environment. Primary stormwater-related issues identified by the plan included:

- Lack of dispersed stormwater management facilities through the basin to mitigate runoff from developed areas,
- Erosion in the Boeing Creek channel and adjacent hillslopes, and subsequent sedimentation in Hidden Lake,
- Piped infrastructure in need of maintenance, repair, or replacement, and
- Poor water quality due to the presence of fecal coliform (FC) bacteria and nutrients

The Boeing Creek basin is essentially fully developed with various land uses that all include significant amounts of pollution-generating impervious surfaces, such as: single family and multifamily residential, commercial, industrial, educational, institutional, and a 1.8-mile segment of the Aurora Avenue corridor. Most of this development occurred prior to adoption of stormwater management requirements. The Boeing Creek Basin Plan estimated that 90% of residential properties in the basin were constructed prior to current stormwater management strategies, and have not been retrofitted. However, due to problems caused by this unmitigated development, regional stormwater facilities were constructed along Boeing Creek beginning in the early 1980s. One of these regional stormwater facilities, the M1 Dam, is located downstream from the Aurora Square study area.

Significant Impacts

Impacts Common to All Alternatives

Impacts to surface waters and water bodies receiving stormwater drainage from urban areas result primarily from increases in the amount of impervious surfaces. Most urban stormwater is generated from precipitation running off of impervious surface areas. In undeveloped areas, the natural ground cover generally consists of vegetation and permeable soils. Precipitation in these areas may be intercepted by vegetation and absorbed by the soils, ultimately contributing to groundwater recharge. This infiltration reduces the amount of surface water that runs off immediately into streams during a storm event. In developed areas with reduced vegetative cover and increased hard surfaces, the amount of water that runs off rather than infiltrates into the ground is increased.

This additional stormwater can carry pollutants that have accumulated on impervious surfaces into receiving waters. Pollutants include oil and gasoline, metals such as copper and zinc, and residue from pesticides, fertilizers, and other chemicals. In addition to carrying increased pollutant loads, increased runoff can also carry soils from the ground surface into streams or other water bodies, and erode stream banks and beds. Flow rates in streams increased above natural conditions results in increased erosion and sediment transport. Sediment can then be carried downstream and deposited in areas of slower moving water such as wetlands, lakes, or estuaries.

All action alternatives would have similar impacts related to potential increases in impervious surfaces, since all alternatives would be subject to the dimensional requirements of the Mixed Business zone, as specified in Section 20.50.020 of the Shoreline Municipal Code (SMC). Although the allowable 95% hardscape coverage in this zone is higher than the existing approximate 80% hardscape coverage in the study area as a whole, the portions of the study area most likely to redevelop has higher existing impervious coverage in the 90-95% range. As a result, none of the action alternatives are anticipated to result in significant increases impervious surfaces. Minor differences between alternatives are not possible to predict prior to development of site plans.

The more significant differences between alternatives are the potential benefits to be gained from stormwater retrofitting that would be required as a part of redevelopment, as discussed in more detail in the Mitigation Measures section below.

Construction activities can also increase sediment input into a stream when vegetation is removed and bare soils is exposed at the construction site. Construction may also lead to increased exposure to pollutants from accidental spills associated with the use of chemicals such as gasoline, paints, or solvents used during construction.

Alternative 1: No Action

As discussed in Section 2.5, the No Action Alternative, properties within the study area would continue with their present retail and offices uses. With no significant changes in building areas and uses, it is anticipated the buildings and parking areas would mostly remain in their current configurations; therefore stormwater impacts related to added impervious surfaces or construction activities would be minimal.

Alternative 2: Phased Growth

The Phased Growth alternative would require redevelopment of a portion of the study area to achieve the additional 500 dwelling units and additional 250,000 square feet of retail and office space. It has been projected that this growth would require redevelopment of approximately 28 acres of the study area (see Figure 3-24). However, the portion of the study area most likely to redevelop has a percentage of hard surface coverage similar or less impervious surface compared to existing conditions. Therefore, as with the No Action Alternative, impacts related to added impervious surfaces would be negligible or non-existent. However, this alternative would have a greater potential stormwater impact related to a 28-acre construction site for the redevelopment area.

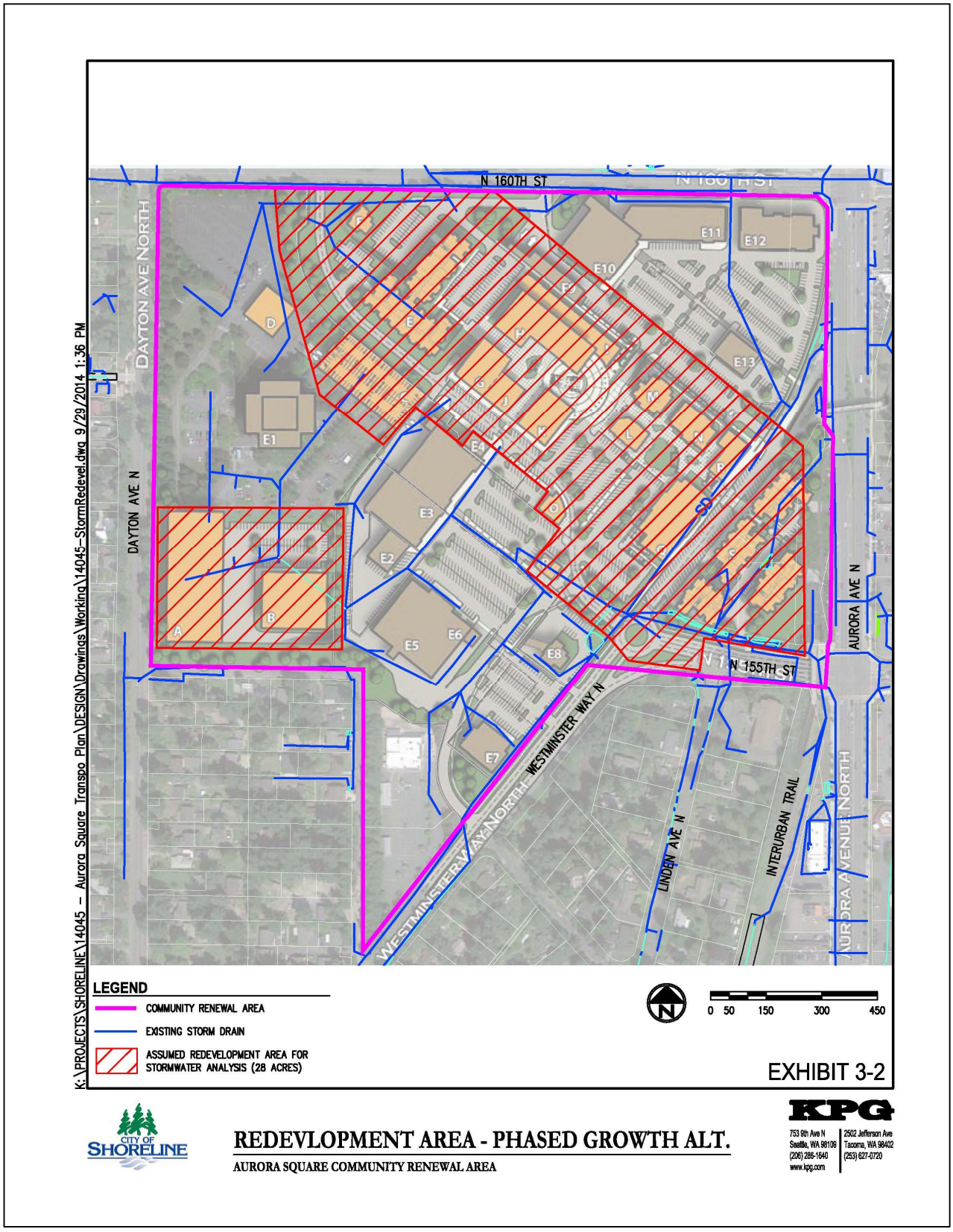
The stormwater benefit of this alternative (as discussed in the Mitigation Measures section below) is expected to be higher than the No Action Alternative, because redevelopment of approximately 28 acres of the site would result in improved water quality and reduced peak flow rates from that area due to stormwater management requirements for new and replaced impervious surfaces.

Alternative 3: Planned Growth

The Planned Growth Alternative would require redevelopment of a greater portion of the study area than the Phased Growth alternative in order to achieve the additional 1,000 dwelling units and additional 500,000 square feet of retail and office space. It has been projected that this growth would require redevelopment of approximately 44 acres of the study area (see Figure 3-25). However, as with the other alternatives, impacts related to added impervious surfaces would be negligible or non-existent. However, this alternative would have the greatest potential stormwater impact during construction, related to a 44-acre construction site.

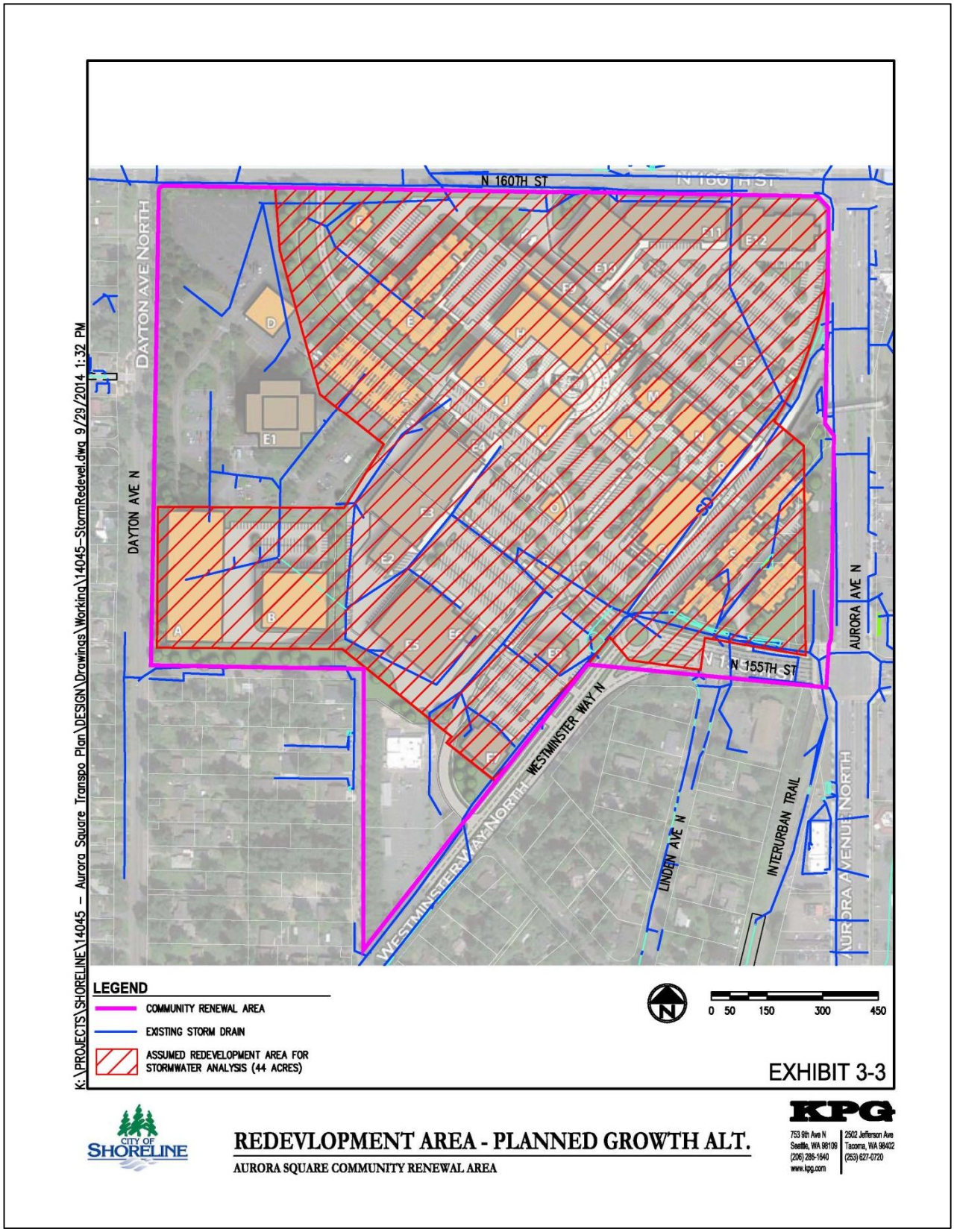
The stormwater benefit of this alternative (as discussed in the Mitigation Measures section) is expected to be the greatest of the alternatives, because redevelopment of approximately 44 acres of the site would result in improved water quality and reduced peak flow rates from that area due to stormwater management requirements for new and replaced impervious surfaces.

Figure 3-24. Potential Redevelopment associated with the Phased Growth Alternative



Source: City of Shoreline, King County Assessor, KPG 2014

Figure 3-25. Potential Redevelopment associated with the Planned Growth Alternative



Source: City of Shoreline, King County Assessor, KPG 2014

Mitigation Measures

Incorporated Plan Features

As noted in Section 2.1, the planned action will consider opportunities and incentives for low- impact and eco-district improvements. Certain requirements for implementing low impact development (LID) techniques related to stormwater already exist in the City of Shoreline through stormwater manual requirements described below. The Planned Action Ordinance seeks to clarify and strengthen these requirements to encourage redevelopment to fully incorporate LID wherever feasible.

Development of a regional flow control facility is also being considered to satisfy requirements triggered by redevelopment in a more cost-effective method than could be achieved on site by individual projects.

Applicable Regulations and Commitments

Stormwater management is regulated by federal, state, and local laws and ordinances. This section provides an overview of the key regulations and policies that relate to stormwater management and stormwater impacts.

Federal Clean Water Act

The Clean Water Act governs the discharge of pollutants into the waters of the United States and regulates water quality standards for surface water. The discharge of any pollutant from a point source into navigable waters without a proper permit is unlawful, under the act; therefore, the NPDES permit program controls these discharges. Ecology, under RCW 90.48 is the permitting agency for NPDES permits in the state of Washington.

Additionally, under Section 401, any activity requiring a Section 404 permit (placement of fill or dredging within waters of the United States) or a Section 10 permit (placing a structure within the waters of the United States) which may result in any discharge into the navigable waters of the United States must obtain a certification from the state certifying that such discharge will comply with the applicable provisions of the Clean Water Act. Ecology, under chapter RCW 90.48, is the certifying agency for Section 401 permits.

Washington State Department of Ecology

As mentioned, Ecology is responsible for implementing and enforcing surface water quality regulations in Washington State. The current water quality standards are established in state regulations (WAC 173-201A). General requirements for stormwater management are contained in the *NPDES Phase II Western Washington Municipal Stormwater Permit*. Specific guidance for achieving stormwater management standards for development and redevelopment projects is provided by Ecology in the *Stormwater Management Manual for Western Washington* (SMMWW).

The SMMWW identifies minimum requirements for development and redevelopment projects of all sizes and provides guidance on implementation of BMPs to achieve these requirements. As part of compliance with the *NPDES Phase II Western Washington Municipal Stormwater Permit*, Ecology's regulations require local agencies to adopt stormwater treatment regulations. Many local agencies, including the City of Shoreline, have chosen to adopt the SMMWW rather than develop a similar but unique set of regulations.

The SMMWW includes requirements and recommended BMPs for managing stormwater runoff during the construction phase. However, if project construction would disturb more than 1 acre of ground and would discharge stormwater to surface waters, redevelopment projects within the study area would require coverage under the *NPDES Construction Stormwater General Permit*. Coverage under this general permit requires submitting an application to Ecology. The permit requires implementing BMPs and performing monitoring activities to minimize construction-related impacts to water quality.

City of Shoreline Municipal Code

Local laws require stormwater discharges to meet water quality and flow control standards. Through Shoreline Municipal Code (SMC) 13.10, the City has adopted the most recent version of the SMMWW

published by the Washington State Department of Ecology. The most recent version of the SMMWW was published in August 2012.

Other Potential Mitigation Measures

Stormwater Retrofit Benefits from Redevelopment

Mitigation of stormwater runoff impacts resulting from redevelopment of the study area will be accomplished by incorporating stormwater management BMPs into the redevelopment projects. The 2012 SMMWW has been adopted by the City, which identifies the specific stormwater requirements applicable to each project and provides the methodology for designing BMPs.

Development within the study area will be classified as "redevelopment" by the SMMWW because the site is already substantially developed, i.e. with 35% or more existing hard surface coverage (Volume 1, Section 2.3 of the SMMWW).

The SMMWW has nine Minimum Requirements for Development and Redevelopment. The applicability of these requirements for redevelopment is dependent on the value of the proposed site improvements as compared to existing improvements. Improvements that exceeds 50% of the assessed value of the existing improvement are required to apply all nine minimum requirements to both new and replaced hard surfaces, with replaced hard surfaces defined as the removal and replacement of hard surfaces down to the foundation (for buildings) or bare soils or base course for other hard surfaces such as pavement for roads, parking lots, and walkways.

Minimum Requirements applied to replaced impervious surfaces will result in benefits to the affected stormwater environment because they will require BMPs to address water quality and flow control, resulting in a net improvement to stormwater leaving the study area as compared to existing conditions. It is difficult to quantify the specific benefits that would be realized with each alternative because the amount of replaced impervious surfaces requiring retrofitting will be dependent on the specifics of proposed redevelopment site plans. However, it appears reasonable to predict that the No Action Alternative will result in the smallest amount of replaced impervious surface, and consequently the smallest stormwater retrofit benefit. Similarly, the Planned Growth alternative will result in the largest quantity of replaced impervious surface, and therefore would have the largest stormwater retrofit benefit.

Low Impact Development Requirements

Low Impact Development (LID) is defined in the *LID Technical Guidance Manual for Puget Sound* (WSU Extension & Puget Sound Partnership, 2012) as follows:

> *Low impact development is a stormwater and land use management strategy that strives to mimic pre-disturbance hydrologic processes of infiltration, filtration, storage, evaporation and transpiration by emphasizing conservation and the use of on-site natural features, site planning, and distributed stormwater management practices that are integrated into a project design. LID strategies can be applied to new development, urban retrofits, infrastructure improvements and revitalization projects to protect aquatic resources.*

Minimum Requirement 5 of the SMMWW specifies LID improvements that must be used to treat runoff from applicable new and replaced impervious surfaces of development projects. Whereas this type of improvement was encouraged but not strictly required by previous versions of the SMMWW, the 2012 version of the manual includes LID requirements that must be met unless specific infeasibility criteria are met. It is not possible to determine the specific LID improvement that will be required for redevelopment projects in the study area because feasibility is highly dependent on soil conditions and specific site plans. However, in general, downspouts from new and replaced roof areas will most likely be required to implement downspout infiltration if soils conditions permit, or include bioretention facilities sized equivalent to 5% of the roof area. Other new or replaced hard surfaces such as parking lots and pedestrian plazas and walkways will most likely be required to utilize permeable pavement. Although, based on currently-available soils information, it does not appear that existing soils within the Aurora Square study area would be suitable for infiltrating concentrated runoff such as downspout

infiltration or bioretention without underdrains, dispersed infiltration such as permeable pavement and bioretention with underdrains will likely be feasible.

Opportunities for Regional Flow Control

As discussed in the previous section, each development proposal will be required by City of Shoreline code to comply with the current version of the Department of Ecology's SMMWW. The current version of this manual was published in 2012 and includes requirements to incorporate LID techniques, facilities to treat runoff from pollution-generating impervious surfaces, and flow control facilities.

Of these three stormwater management components, it is anticipated that flow control will be the most costly to implement, because current standards require retrofitting both new and replaced impervious surfaces on development sites so that rates of runoff mimic those of a pre-development, forested condition. In areas such as the study area that, due to underlying soil conditions, are not expected to have significant capacity to infiltrate stormwater, this level of flow control is typically accomplished using a detention facilities such as an open pond or underground tanks or vaults. With the high intensity of land use that would accompany either of the two action alternatives, underground concrete vaults would be the most likely method used for flow control.

With flow control being a significant cost that could have the effect of discouraging the type of redevelopment described in the action alternatives, the City has begun to explore regional flow control options that could be achieved at a lower cost while providing an equivalent or greater flow control benefit. Two regional flow control options are currently being explored, both of which are located on Shoreline Community College (SCC) property in the vicinity of the College's Greenwood parking lot and the City's M1 Dam regional detention facility (see Figure 3-26 for location).

Soils in the vicinity of the Greenwood parking lot are mapped as advance outwash, which are permeable and typically suitable for infiltration of stormwater. As part of the SCC's *Stormwater Master Plan* (Reid Middleton, 2013), preliminary subsurface exploration and geotechnical analysis was performed that confirmed the presence of outwash soils and proposed an infiltration rate for use in preliminary design.

Utilizing infiltration capacity has a significant impact on the size of flow control capacity. Preliminary calculations indicate that, given the infiltration rates anticipated in the Greenwood parking lot area, the required storage volume needed to satisfy the flow control requirement is approximately 25 percent of the volume that would be required for a facility that does not use infiltration.

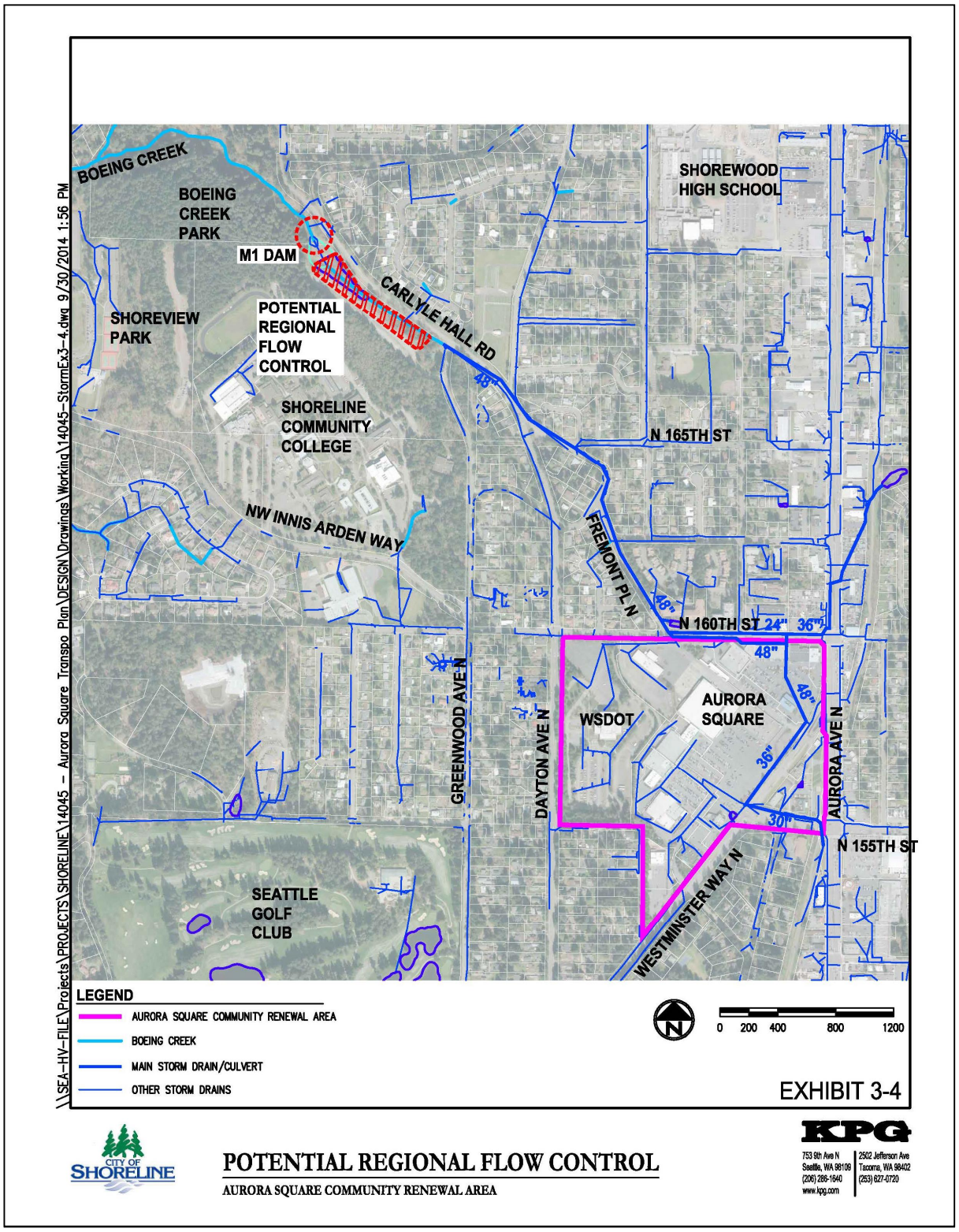
SCC's Campus Master Drainage Plan (Reid Middleton, 2013) identified the Greenwood Parking Lot as the proposed location for stormwater facilities to serve campus redevelopment over the next 30 years. The plan proposed a phased approach, first developing a small facility at the north end of the lot for initial projects, expanding the facility to the south as additional capacity is needed for subsequent projects. SCC's proposed flow control facility would utilize both infiltration and controlled discharges into the City's adjacent M1 Dam facility on Boeing Creek.

Both of the two regional flow control options currently being explored would utilize the entire area of the Greenwood parking. Both would be sized, at a minimum, to provide flow control for the Planned Growth alterative for the study area as well as SCC's planned development projects for the portion of the campus that drains to Boeing Creek upstream from the M1 Dam. The differences between the options being considered are related to the size of the facility and whether it would be constructed in-stream as an expansion to the existing M1 Dam regional detention facility, or as a separate, smaller facility located adjacent to the existing facility. Based on preliminary sizing calculations, it appears that the larger facility constructed in-stream as an expansion to the M1 Dam facility would have a greater regional benefit, having enough capacity to serve redevelopment of the part of the City's proposed Town Center that drains to the facility, as well as a portion of other mixed use and commercial projects constructed along Aurora Avenue N located south of the Town Center.

Creating a downstream regional flow control facility to serve the study area, if pursued by the City, would require additional study and analysis to verify feasibility, preparation of regional facility basin plan for review by Ecology, environmental analysis and permitting, and final design and construction. In addition, agreements would need to be accomplished with SCC regarding use of college property for the facility as well as addressing impacts to the college from the loss of parking.

Initial funding for the facility would mostly likely come from the City, with a portion or all of the cost reimbursed by future "fee in lieu" payments from upstream developers that choose to utilize the regional facility instead of on-site flow control.

Figure 3-26. Potential Regional Flow Control Offsite Mitigation Options



Source: City of Shoreline, King County Assessor, KPG 2014

Significant Unavoidable Adverse Impacts

Given the extensive development already in the study area and associated adverse impacts to surface waters from existing untreated runoff, it is expected that mitigation measures associated with redevelopment with either of the action alternatives would lead to an overall improvement of stormwater runoff quality from the study area. The No Action Alternative, with its minimal construction activity and no added impervious surface, would have no unavoidable adverse impacts from stormwater runoff. Under all alternatives, onsite flow control or downstream regional flow control facilities would be needed to meet City standards; offsite regional flow control would have cumulative benefits to the CRA study area, SCC properties, and other development properties along Aurora Avenue N, which would have the ability to utilize LID practices.

3.5 Sewer and Water

Affected Environment

Water

Seattle Public Utilities

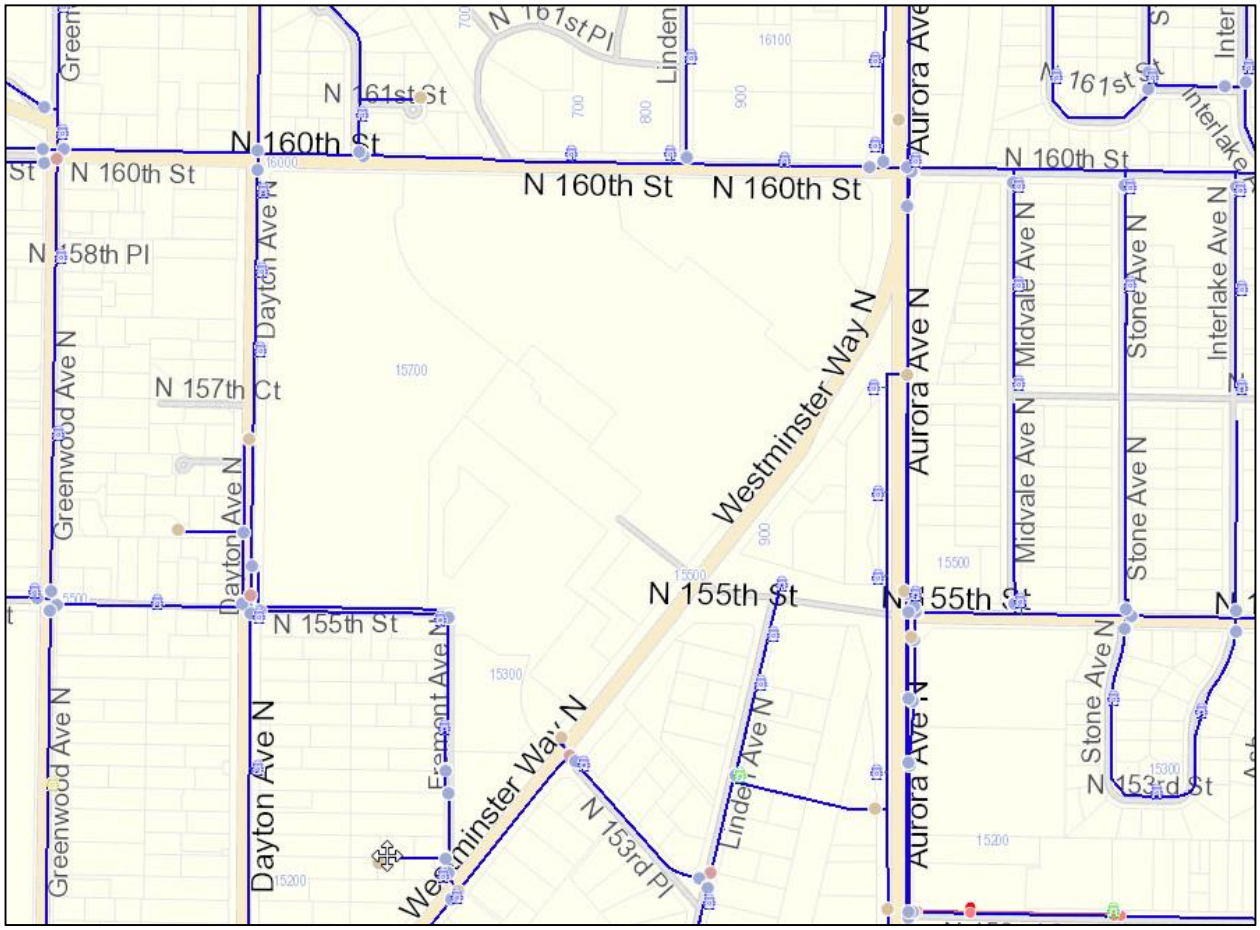
The City of Shoreline currently receives water services from Seattle Public Utilities (SPU) and the North City Water District. Generally, SPU serves those portions of Shoreline west of Interstate 5, including the Aurora Square study area, and North City Water District serves areas to the east.

SPU provides water to a service area population of 1.3 million people, which includes the City of Seattle and its greater metropolitan area, and southern parts of Snohomish County (SPU 2013 Water System Plan Volume I, 2012). SPU's water supply comes from the Cedar River, the South Fork Tolt River, and two well fields that provide groundwater (SPU 2013 Water System Plan Volume I, 2012). Average annual demand is forecasted to remain at or below 133 million gallons per day through 2060 (SPU 2013 Water System Plan Volume I, 2012). SPU's water transmission system included 193 miles of pipeline, seven covered reservoirs, 15 pump stations, six elevated tanks and standpipes, and 129 wholesale customer taps with meters (SPU 2013 Water System Plan Volume I, 2012).

Aurora Square Study Area

The Aurora Square study area is surrounded by 8 inch to 16 inch water mains (Mantchev, 2014). Figure 3-27 shows the water system around Aurora Square. The water mains inside Aurora Square are privately owned by business owners (Mantchev, 2014)

Figure 3-27. Water System around Aurora Square



Source: SPU, 2014; BERK, 2014.

The Aurora Square area is served by the Foy Pump Station, which is located at the intersection of 5th Avenue NE and NE 145th Street (Mantchev, 2014). If the Foy Pump Station and the North City Pump Station (further East) are offline, the Bitter Lake Pump Station, located at Bitter Lake Reservoir, provides a backup source of water to the City of Shoreline (EES Consulting, 2012).

Water storage for the Aurora Square area is provided by the Richmond Highland Tanks, which are located at N 195th Street and Fremont Avenue (Mantchev, 2014). The Richmond Highland Tanks include one tank that can hold 1 million gallons of water, and another tank that can hold 2 million gallons of water (EES Consulting, 2012). Standby storage is provided by Bitter Lake Reservoir, which is located in Seattle (Mantchev, 2014).

Water Demand

Table 3-20 shows the average annual consumption per household within the SPU service area with information broken down by City of Seattle consumers, wholesale consumers, and North City Water District consumers (Flory, 2014). The North City Water District is the water district that provides water to the areas in the City of Shoreline that are East of Interstate 5. Non-residential accounts include downtown office buildings, Nucor Steel, small convenience stores and many other businesses that range among those ranges.

Table 3-20. Seattle Public Utilities Water Demand, 2013

	Residential Water Demand per Household (GPD)		Non-Residential Demand per Account (GPD)
	Single Family	Multifamily	
City of Seattle	134	73	1,620
Wholesale	172	140	837
North City Water District	141	127	530

Source: SPU, 2013; BERK, 2014

Seattle Public Utilities (SPU) is able to provide water demand information for the City of Seattle, wholesale customers, and the North City Water District, as noted in Table 3-20. However, SPU does not have demand information available specifically for the portion of Shoreline it serves directly, which includes Aurora Square. Estimating future water demand for the Aurora Square site based on the aggregate City of Seattle data available from SPU would not be appropriate, as this data includes Downtown Seattle, which has a very different development pattern than Aurora Square. Future demand at Aurora Square is likely to be more similar to other areas of Shoreline (like the North City area), rather than Seattle. Therefore this EIS analyzes the planned action growth for the Aurora Square area using the multifamily demand factors for North City Water District, which serves the eastern portions of Shoreline. SPUs information for an area similar to Aurora Square shows a multifamily residential water demand of 127 gpd; this factor is used in the estimation of increased demand for Alternatives 2 and 3 in the impact analysis below.

Since it was not possible to determine how many people or square feet are served by a non-residential account, this analysis cannot determine by how much the non-residential demand per account will increase.

Fire Flow

The City of Shoreline Fire Department follows the 2012 International Fire Code Requirements. According to the Fire-Flow Requirements for Buildings section of the International Fire Code, the following building types require hydrants with 8,000 gpm:

- Type IV and V-A: Greater than 191,401 SF
- Type IIB and IIIB: Greater than 138,301 SF
- Type V-B: Greater than 85,101 SF

A reduction in required fire-flow of 50% is allowed when the building is equipped with an approved sprinkler system. The fire hydrants around Aurora Square have a capacity of 4,000 gpm, which is able to meet the fire flow requirements for the additional 500,000 square feet of retail space and 1,000 residential units, provided that approved sprinklers are installed during construction.

Sewer

The City of Shoreline currently receives sewer services from the Ronald Wastewater District. The Ronald Wastewater District provides wastewater services in the City of Shoreline and to unincorporated Snohomish County (CHS Engineers, 2010). The District presently serves an area of approximately 6,870 acres and over 99% of the City of Shoreline's 54,320 residents

The Ronald Wastewater District sewer system in whole consists of 16 lift stations, 21 individual grinder pumps and 190 miles of 6 to 30 inch diameter sanitary sewer mains (CHS Engineers, 2010).

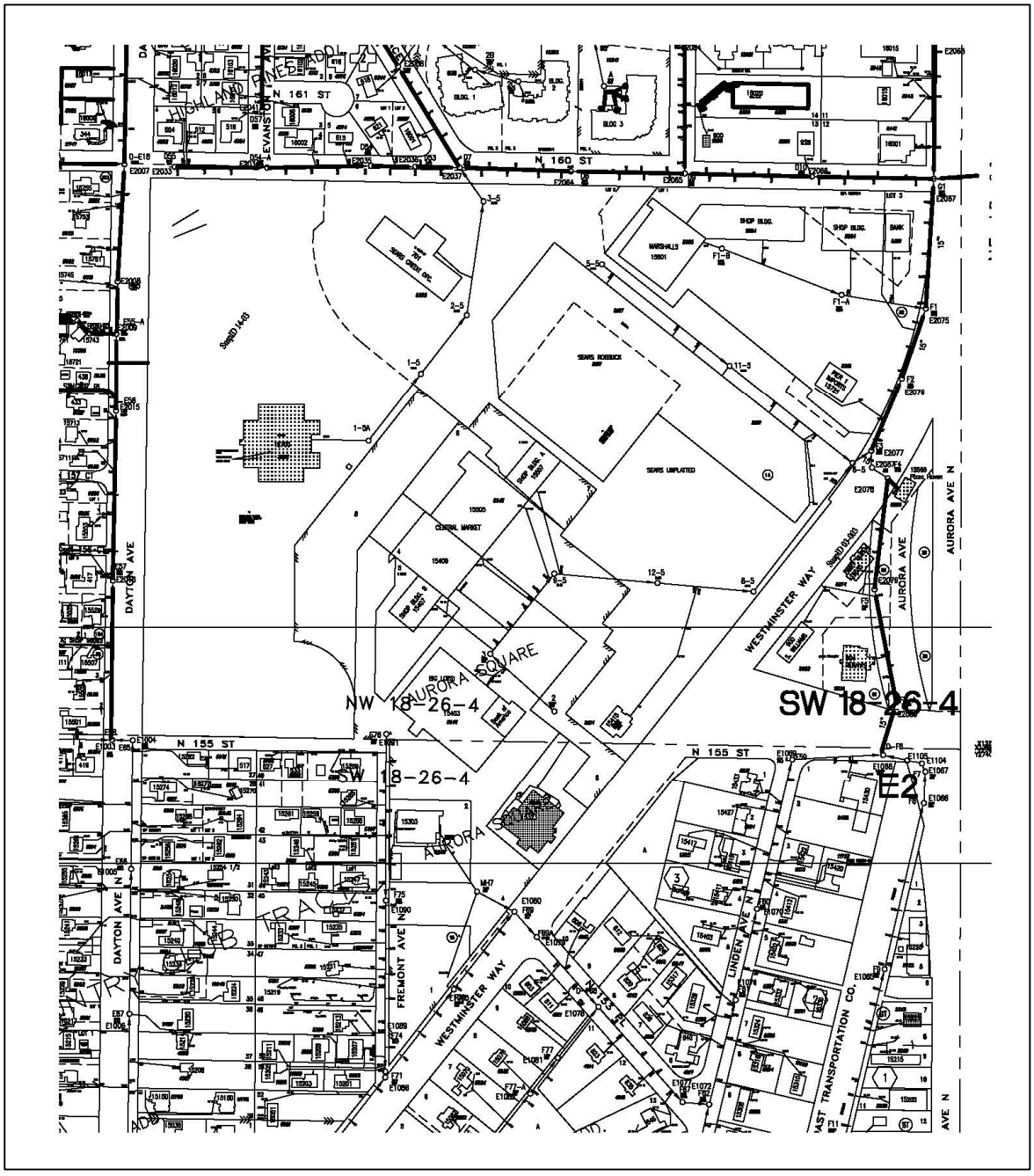
The City of Shoreline is in the process of establishing an inter-local agreement with the Ronald Wastewater District to unify sewer services, which is anticipated to occur in October 2017 (City of Shoreline, 2014).

Sewer Infrastructure

Sewer infrastructure within the vicinity of the Aurora Square study area includes the following (see Figure 3-28):

- 15" main on Aurora Avenue
- 8" mains within Aurora Square

Figure 3-28. Sewer System in Aurora Square Vicinity



Source: Ronald Wastewater District, 2014.

Treatment

The wastewater is collected and treated at two different wastewater treatment facilities – the City of Edmonds' treatment plant and King County's West Point treatment plant (CHS Engineers, LLC, 2010).

Sewer Demand

The Ronald Wastewater District Sewer Comprehensive Plan, last updated in 2010, established that the district had an average residential demand of 85 gallons per capita per day (CHS Engineers, LLC, 2010).

Capital Improvement Projects

The 2010 Ronald Wastewater District Sewer Comprehensive Plan listed the Aurora Avenue North Sanitary Sewer Improvement project as a planned capital improvement project (CHS Engineers, LLC, 2010). It was estimated to cost $832,000 and the improvement was planned for 2019 and would be funded with bonds (CHS Engineers, LLC, 2010). The project has not entered the planning stage yet, and was based on a capacity study using city growth projections at the time.

The City of Shoreline is in the process of working with the Ronald Wastewater District to enter into an Interlocal Operating Agreement to unify sewer services, which is anticipated to occur in October 2017 (City of Shoreline, 2014).

Significant Impacts

Impacts Common to All Alternatives: Water

Water Demand

Development in the Aurora Square study area will generate additional population and employment, which would increase demand for water services. As part of a King County Buildable Lands Report (2014), the City of Shoreline assumes each employee is equal to 300 square feet of commercial space, and the 2008-2012 US Census indicates that the average household size in Shoreline is 2.4 persons. These assumptions are applied to the space and dwelling unit estimates of the alternatives in Table 3-21 to estimate the current and projected population and employment in the Aurora Square study area.

Table 3-21. Projected Increase in Population and Employment by Alternative

Alternative	Projected Net Residential Units	Projected Net Commercial Development	Population Established (Net)	Total Population	Employment Established (Net)	Total Employment
Alternative 1		-	7	7	1,528	1,528
Alternative 2	500	250,000	1,220	1,227	833	2,361
Alternative 3	1000	500,000	2,440	2,447	1,667	3,195

Source: City of Shoreline Transportation Master Plan 2010, King County Buildable Lands Report 2014, US Census, 2008-2012; BERK, 2014

Based on the estimated population associated with the net increase in dwelling units, the increase in residential average annual demand is shown in Table 3-22.

Table 3-22. Projected Increase in Residential Average Annual Demand for Water

	Projected Net Units	Increase in Demand (gpd)
Alternative 1	0	0
Alternative 2	500	63,500
Alternative 3	1,000	127,000

Source: SPU, 2013; BERK, 2014.

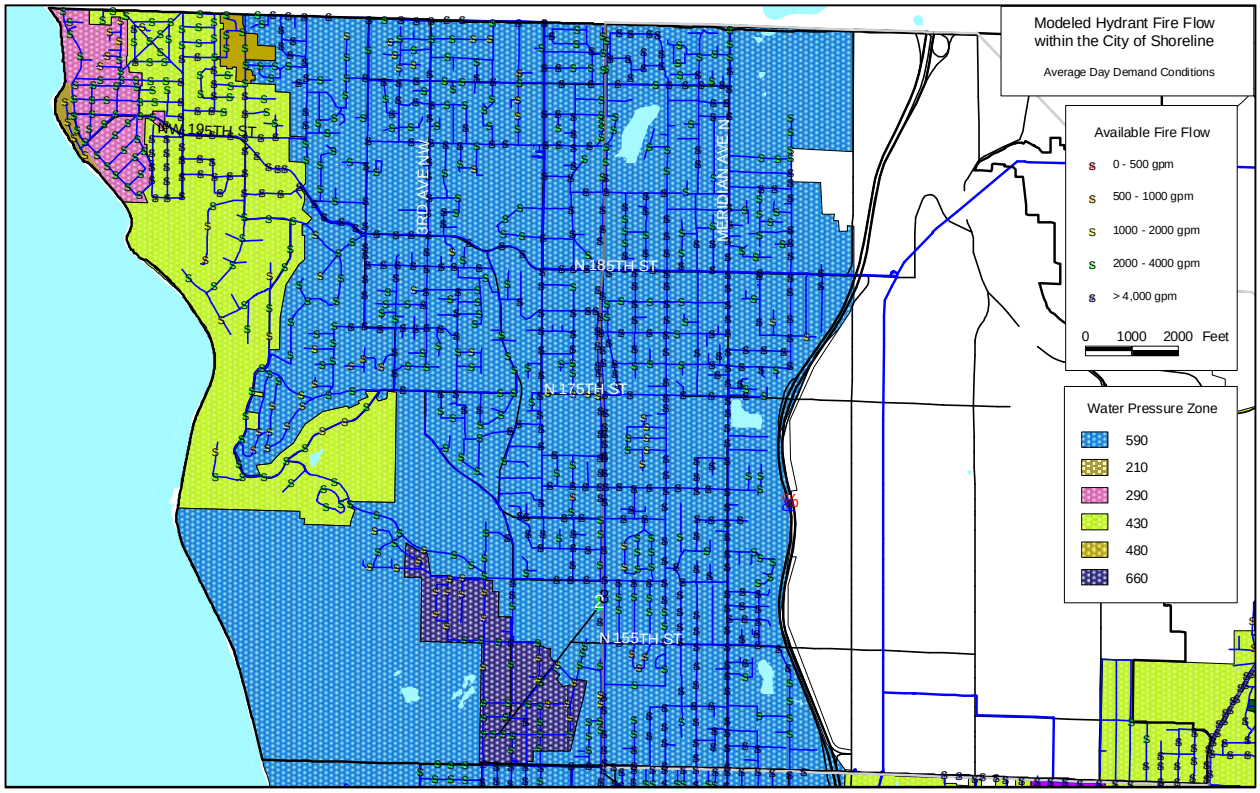
Presently there are 16 parcels with multiple businesses in the Aurora Square study area. It is not possible to know how many accounts or commercial businesses will develop the Aurora Square study area under the alternatives. It is likely that the demand will be similar to the North City Water District

demand, which is 530 gallons per account per day. The North City Water District provides water to the City of Shoreline that is East of Interstate 5. While it is not possible to determine approximately how many gallons per day would be used for commercial purposes in the area, it is anticipated that the number of accounts would increase under the action alternatives with the greater number of accounts likely under Alternative 3 Planned Growth and a moderate increase in accounts under Alternative 2 Phased Growth.

Fire Flow

The required fire flow and flow duration for buildings that are larger than 85,101-191,401 square feet depending on building type[8] is 8,000 gallons per minute (International Code Council, 2012). There is a reduction of 50% when the building is equipped with an approved automatic sprinkler system. Figure 3-29 below shows that the Aurora Square Area is equipped with hydrants that have available fire flow that is greater than 4,000 gallons per minute.

Figure 3-29. Modeled Hydrant Fire Flow within the City of Shoreline



Source: SPU, 2012; BERK, 2014.

Alternative 1 No Action: Water

Alternative 1, assuming the study area is utilized fully, would support 1,528 employees. The current water system has the capacity to support the building space fully occupied with water services.

Alternative 2 Phased Growth: Water

Alternative 2 will generate an additional 1,220 residents, and 833 net employees. That will add an additional 63,500 gallons per day to the water demand for residential usage. It is not possible to generate the commercial demand at this time. However, SPU was contacted with a description of the

[8] Larger than 191,401 square feet (Type IV and V-A buildings), 138,301 square feet (Type IIB and IIIB buildings), 85,101 square feet (Type V-B buildings).

growth under Alternative 2, and SPU has indicted the current water system has the capacity for this growth (Mantchev, 2014).

Alternative 3 Planned Growth: Water

Alternative 3 will generate an additional 2,440 residents, and 1,667 net employees. That will add additional 127,000 gallons per day to the water demand for residential usage. SPU was contacted with a description of the growth under Alternative 3, and SPU has indicted the current water system has the capacity for this growth (Mantchev, 2014).

Impacts Common to All Alternatives: Sewer

The Ronald Wastewater District Comprehensive Plan established that the district has an average residential demand of 85 gallons per capita per day (gpcd). The Comprehension Plan also establishes equivalent commercial/ business population densities, i.e. 108 employees per acre is equivalent to 25 residents per acre. Using this ratio and the average annual residential demand, the average annual commercial demand is approximately 4.32 gpcd (see Table 3-23). This is an approximation and it is recognized that usage would fluctuate among different businesses.

Table 3-23. Increased Sewer Demand by Alternative

	Expected Commercial		*Expected Residential*	
	Employment Estimate	**Increased Demand (gpd)**	**Projected Net Units**	**Increased Demand (gpd)**
Alternative 1	1,528	6,601	0	0
Alternative 2	833	3,600	500	42,500
Alternative 3	1,667	7,200	1,000	85,000

Source: Ronald Wastewater Sewer District, 2010; BERK, 2014.

The additional potential commercial and residential development will cause a greater demand on the sewer system. According to the Ronald Wastewater District, there is current capacity in the system (Proffitt, 2014). Additionally, the Ronald Wastewater District 2010 Sewer Comprehensive Plan lists the Aurora Avenue North Sanitary Sewer Improvement project as planned for 2019. As the demand in the area grows, these capital improvements will be beneficial.

Currently, the sewer mains within Aurora Square are privately owned and any upgrades will require coordination. However, as a practice, the Wastewater District takes control of sewer mains of a certain size. The Ronald Wastewater District would take control of private sewer mains when the sewer main is larger than 8 inches (Proffitt, 2014). The City of Shoreline would generally take control of private sewer mains when the sewer main is larger than 6 inches (Relph, 2014). If updates are made to the private sewer mains within Aurora Square, some of them would be larger than 8".

If the current 8" sewer mains are updated to bigger mains, they would be in the category of when either the Ronald Wastewater District or the City of Shoreline would take control of private lines.

Alternative 1 No Action: Sewer

Currently, the commercial space within Aurora Square is not fully utilized. At present, the study area is estimated to contain1,528 employees, which at standard rates would have an average annual commercial demand of 6,601 gallons per day (gpd). The City's Transportation Master Plan estimates 3 existing dwelling units in the Transportation Analysis Zones encompassing the Aurora Square Study Area, but Alternative 1 assumes no net increase in dwellings. The overall average annual demand is estimated to be 6,601 gpd.

Alternative 2 Phased Growth: Sewer

Alternative 2 would create an additional 833 employees beyond the No Action level, which will increase the average annual commercial demand to 3,600 gpd, and 500 projected net residential units, which would increase the average annual residential demand to 42,500 gpd. The overall average annual

increase to demand will be 46,100 gpd. The Ronald Wastewater District estimates sufficient capacity to serve the added growth.

Alternative 3 Planned Growth: Sewer

Alternative 3 would create an additional 1,667 employees beyond the No Action level, which will increase the average annual commercial demand to 7,200 gpd, and 1,000 projected net residential units, which would increase average annual residential demand to 85,000 gpd. The overall average annual increase to demand will be 92,200 gpd. The Ronald Wastewater District estimates sufficient capacity to serve the added growth.

Mitigation Measures

Incorporated Plan Features

Water

None.

Sewer

The Aurora Square Community Renewal Area Plan promotes the use of an eco-district. The CRA describes the eco-district as follows: Exceptional environmental wins are achieved when clusters of buildings work together to achieve sustainability in a 'eco-district.' The Aurora Square CRA provides sufficient size to experience economies of scale with cost-effective facilities and infrastructure, whether they be treating storm or waste water, providing clean power, or achieving other environmental goals.

This could result in private development taking advantage of heat recovery from wastewater systems. The City is allowing a density of development that could result in a cost effective scale of development for such heat recovery systems. Example developments in North Vancouver and Richmond, British Columbia, and elsewhere are potential models.[9]

Applicable Regulations and Commitments

Water

SPU has adopted a water system plan and considered City of Shoreline Zoning as of 2012 to help determine system needs; city zoning indicated a mixed use designation for the subject property (SPU Water System Plan 2013). SPU design standards indicate that fire flow is determined based on the City's Fire Code and considered when issuing Water Availability Certificates. SPU will determine availability of services at the time of development (i.e. Certificates of Availability).

Shoreline implements Chapter 20.60 SMC, Adequacy of Public Facilities, and requires adequate water supply and fire protection. Shoreline also implements Chapter 13.05 SMC, Water and Sewer Systems Code, and applies King County codes and standards.

Sewer

Currently, new development is required to pay a general facilities fee of $2,506/ unit by the Ronald Wastewater District.

Shoreline implements Chapter 20.60 SMC, Adequacy of Public Facilities, and requires adequate sewer disposal.

[9] The City of Richmond is adding such a system in a downtown theater: http://www.sewageheatrecovery.com/wp-content/uploads/2014/05/City-of-Richmond-Gateway-Theatre-report.pdf. A North Vancouver multifamily development of 60 townhomes includes a sewage heat recovery system: http://www.sewageheatrecovery.com/wp-content/uploads/2014/01/Case-Study-Issue-01-SEVEN35.pdf.

Other Potential Mitigation Measures

Water

The current water system infrastructure and supply are able to meet the additional residential and employment need. The water mains inside the study area are owned privately, and there would need to be coordination if the privately owned water mains need to be extended.

Sewer

Sewer mains within Aurora Square are privately owned, and any upgrades will require coordination. However, as a practice, the Wastewater District takes control of sewer mains of a certain size. The Ronald Wastewater District explained that they take control of private sewer mains when the sewer main is larger than 8 inches. The City of Shoreline stated that they would generally take control of private sewer mains when the sewer main is larger than 6 inches. If updates are made to the private sewer mains within Aurora Square, some of them would be larger than 8".

The City's capital plans, system development charges, and standards regarding assumption of private lines will be established after 2017 when the system is unified within City services.

Significant Unavoidable Adverse Impacts

Water

The current water system has the infrastructure and the supply for this increased demand. With mitigation measures to assure adequate facilities at the time of development, no significant unavoidable adverse impacts are anticipated.

Sewer

With the proposed improvements to the sewer mains, the sewer system can meet the increased demand associated with the alternatives. With mitigation measures to assure adequate facilities at the time of development, no significant unavoidable adverse impacts are anticipated.

3.6 Schools and Parks

Affected Environment

Parks

Existing Services

Based on the City's Parks, Recreation, and Open Space Plan (PROS Plan, 2011), the City of Shoreline owns 404 acres of parks and recreational land and facilities. Based on a Geographic Information System (GIS) analysis the nearest recreational facilities to the study area include the following:

- **The Richmond Highlands Park and Recreation Center:** The area includes a 4.2 acre Community Park and a 6,650 square foot special use recreation center. The Center is home to many City of Shoreline programs aimed at tweens and teens, specialized recreation, and a variety of other programs. Special features of the Center include a small gym with stage, game room with billiard and ping pong tables, meeting room with kitchen, additional ball field, and playground equipment. The special use recreation center can be rented out Saturdays and Sundays.
- **Shoreview Park:** Shoreview Park is a 47.1 acre large urban park that is adjacent to Shoreline Community College and Boeing Creek Park. The park includes a wooden natural area with trails, a playgrounds, picnic tables, baseball and softball field, soccer field, and tennis courts.
- **Darnell Park:** Darnell Park is a 0.8 acre natural area that is adjacent to the Interurban Trail. The Interurban Trail is a trail that runs from Everett, WA to the Seattle neighborhoods of Bitter Lake and Greenwood. The site is currently underdeveloped due to its location and its use as a surface water drainage area.

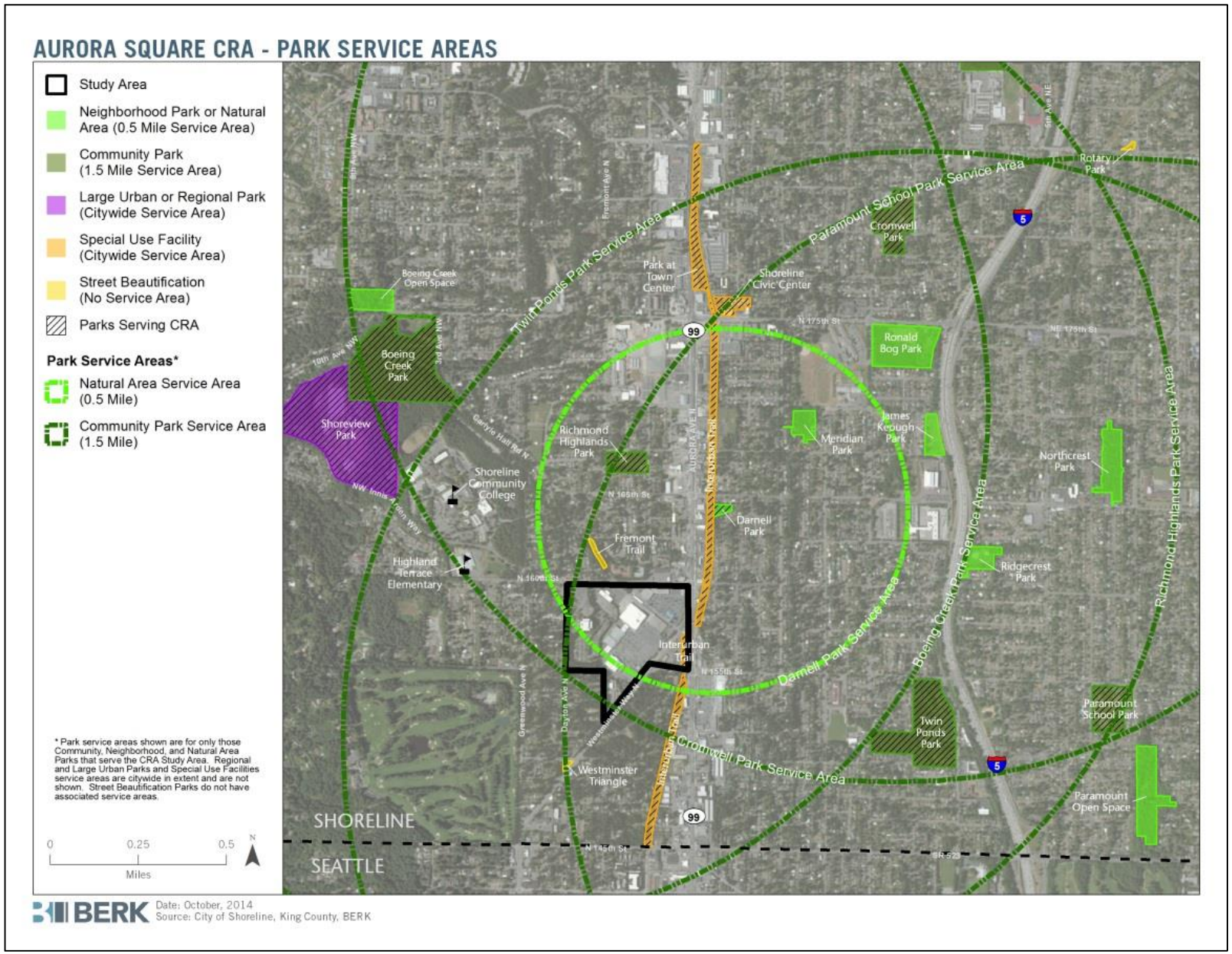
Other parks that include Aurora Square in their service areas are:

- **Community Parks:** Twin Ponds Park, Paramount School Park, Cromwell Park, and Boeing Creek Park.
- **Large Urban Parks:** Hamlin Park
- **Regional:** Richmond Beach Saltwater Park
- **Special Use Facilities:** Interurban Trail, Kruckeberg Botanic Garden, N 195th St Trail, Park at Town Center, and Shoreline Civic Center
- **Street Beautification Areas:** Fremont Trail, Westminster Triangle

The Seattle Golf Course is also located close to the study area; however, it is a private club, which requires a membership.

See Figure 3-30 for nearby parks and recreation facilities.

Figure 3-30. Aurora Square Park Service Areas



Source: City of Shoreline, 2014; BERK, 2014.

Parks Level of Service

As noted in the City of Shoreline Comprehensive Plan 2012, the City of Shoreline has adopted Level of Service Standards for access to park and recreation facilities as shown in Table 3-24.

Table 3-24. City of Shoreline Parks in Proximity to Aurora Square

Park Classification	Service Area in Miles	Park nearest Aurora Square	Level of Service (LOS) Standard	
			Distance from Aurora Square	Meets LOS Standards
Regional Parks	Citywide	Richmond Beach Saltwater Park	2.2 miles	Yes
Large Urban Parks	Citywide	Shoreview Park	0.9 miles.	Yes
Special Use Facilities	Citywide	Richmond Highlands Recreation Center	0.5 miles	Yes
Community Parks	0.5 mile	Richmond Highlands Park	0.5 miles	Yes
Neighborhood Parks	0.5 mile	James Keough Park	1.0 miles	No
Natural Areas	0.5 mile	Darnell Park	0.4 miles	Yes
Street Beautification	None	Fremont Trail	0.06 miles	Yes

Source: City of Shoreline 2011; BERK, 2014

The City's PROS Plan indicates that based on the National Recreation and Parks Association (NRPA) service standards much of the City of Shoreline is deficient in Neighborhood Parks. The PROS Plan indicates that if school sites are indicated in the LOS, which is a more flexible Amenity Driven Approach, the Neighborhood Park LOS would be met. The closest school site to Aurora Square is Highland Terrace Elementary School, which is approximately 0.3 miles from Aurora Square. Highland Terrace does fall in the Neighborhood Parks service area of 0.5 mile; therefore, if the Amenity Driven Approach was used, the LOS for all parks would be met.

Recommended Improvement Projects

The Shoreline PROS Plan recommends capital improvement projects for the following parks near the Aurora Square study area – Darnell Park, Richmond Highlands Park and Recreation Center, and Shoreview Park as shown in Table 3-25.

The projects are suggested over the following phases: short-term priority over one to six years; mid-term priority over seven to twelve years; and long-term priority over thirteen to twenty years.

Table 3-25. Parks Capital Improvement Projects – Parks Serving Aurora Square

Short Term Priority	Mid-Term Priority	Long-Term Priority
Richmond Highlands Recreation Center	**Richmond Highlands Recreation Center**	**Darnell Park**
Newly renovated bathrooms: $150,000	Expand stage and add storage: $50,000	Interpretive Signage: $5,000
Install retractable basketball hoops: $2,000	Cost-Benefit Analysis for replacement: $25,000	Park entry sign: $4,000
Richmond Highland Park	**Richmond Highlands Park**	Habitat restoration: $3,000
On-street way-finding signage: $5,000	Backstop replacement: $80,000	**Richmond Highlands Recreation Center**
Shoreview Park	Fencing upgrades along east side: $10,000	Interpretive signage: $2,000
Lower field backstop and dugout stops: $50,000	**Shoreview Park**	Repair, replace interior systems including HVAC, plumbing, electrical, floorings and flourishing: to be determined
Tennis court resurfacing: $30,000	Master Plan/ Phase I: $200,000+	**Richmond Highlands Park**
On-street way-finding signage: $5,000	Renovate dirt soccer field: $1,500,000	Improve parking and entry at 167th/ Linden: $75,000
	Add picnic tables/ shelter: $75,000	Drinking foundation field I, benches and soccer goals: $8,000
	Invasive vegetation removal 5k-10k year: $50,000	Picnic table and bench by play area: $4,000
	Park entry improvements: $10,000	**Shoreview Park**
	Add spectator seating at the tennis courts: $10,000	Dog-off Leash Area Access Site Plan: $100,000
		Entry sign replacement: $4,000

Source: City of Shoreline 2011; BERK, 2014

Onsite Open Space Standards

Under SMC 20.50.240 Site Design, Subsection G, the City requires multifamily open space:

> *G. Multifamily Open Space.*
>
> *All multifamily development shall provide open space;*
>
> *a. Provide 800 square feet per development or 50 square feet of open space per dwelling unit, whichever is greater;*
>
> *b. Other than private balconies or patios, open space shall be accessible to all residents and include a minimum lineal dimension of six feet. This standard applies to all open spaces including parks, playgrounds, rooftop decks and ground-floor courtyards; and may also be used to meet walkway standards as long as the function and minimum dimensions of the open space are met;*
>
> *c. Required landscaping can be used for open space if it does not obstruct access or reduce the overall landscape standard. Open spaces shall not be placed adjacent to service areas without full screening; and*
>
> *d. Open space shall provide seating that has solar access at least a portion of the day.*

The City's commercial site design standards at SMC 20.50.240 Site Design, Subsection F, require public places within commercial portions of development at a rate of four square feet of public place per 20 square feet of net commercial floor area up to a public place maximum of 5,000 square feet.

Schools

The Shoreline Public School District provides public education services to the cities of Shoreline and Lake Forest Park (Shoreline Public Schools, 2014). The district has nine elementary schools, two middle schools, two high schools, a Kindergarten (K) through Grade 8 school, a Pre-K and Extended Day Children's Center, and a Home Education Exchange (Shoreline Public Schools, 2014).

Students in proximity to the Aurora Square study area are zoned to attend Parkwood Elementary School, Einstein Middle School, and Shorewood High School (Shoreline Public Schools, 2014).

The Office of Superintendent of Public Instruction (OSPI) 2013-14 Shoreline School District enrollment was as follows:

Elementary School (K-6th Grade): 4,677

Middle School (7th-8th Grade): 1,395

High School (9th-12th Grade): 2,759

Total (K-12th Grade): 8,831

For the 2013-14 school year, the school district had a total of 8,831 students. OSPI projects that overall student enrollment will increase to 10,213 in 2019, an increase of 15.6% over current enrollment (OSPI, 2014).

The OSPI Report Card stated that the Shoreline School District had 509 classroom teachers in the 2013-14 school year (OSPI, 2014). The current student to teacher ratio is 17.3 students for every classroom teacher (OSPI, 2014).

Capital Improvements

The Shoreline School District implemented the following capital improvement projects for Parkwood Elementary School and Einstein Middle School from 2007 through 2014 (Miller, 2014):

- Parkwood Elementary School
  - Roof upgrade (2007)
  - Fire Alarm upgrade (2009)
  - Exterior painting (2009)
  - Play field renovation (2013)
- Einstein Middle School
  - Athletics field renovation (2009)
  - Exterior painting (2011)
  - Fire alarm upgrade (2014)

Shorewood High School is a new high school in the Shoreline School District that opened in the fall of 2013 with a capacity of 1600 students. There are currently no capital improvement projects for Shorewood High School (Miller, 2014).

Significant Impacts

Impacts Common to All Alternatives: Parks

Population growth in the study area under Alternative 2 and Alternative 3 would generate increased demand for parks and recreational facilities and programs. Currently, the LOS for regional parks, large urban parks, special use facilities, community parks, and natural area parks are being met at the Aurora Square study area. Many of the parks within the Aurora Square service area are east of SR 99. Residents and employees at Aurora Square would have to cross SR 99 such as by the overpass at Westminster Way in order to access several parks.

The level of standard for Neighborhood Parks, a service area of half a mile, is currently not being met with the closest neighborhood park being a mile away. The Amenity Driven Approach is proposed in the PROS plan as a way to recognize the neighborhood recreation opportunities at schools. The closest school to Aurora Square is Highland Terrace Elementary School, which is approximately 0.3 miles away

from Aurora Square. If the Amenity Driven Approach is followed, Highland Terrace is within the service area of a Neighborhood Park.

The City of Shoreline Municipal Code will require private open space for residential and mixed-use developments. Depending on the alternative and the number of bedrooms of each dwelling unit, the developer would need to provide on-site open space. Table 3-26 reviews the range of private open space that would be required by alternative.

Table 3-26. Open Space Requirements by Alternatives

Type of Dwelling Unit	Alternative 1 (SF)	Alternative 2 (SF)	Alternative 3 (SF)
Multifamily open space			
50 square feet per dwelling unit	0	25,000	50,000
Commercial Space			
4 square feet of public place per 20 square feet of net commercial floor area	0	50,000 total 10 spaces of 5,000 sf maximum	100,000 20 spaces of 5,000 sf maximum

Source: City of Shoreline Municipal Code, 2014; BERK, 2014

Further some of the space would likely include general open space of about 800 square feet per development or 50 square feet per unit, whichever is greater. That would total a minimum of 25,000 square feet for Alternative 2 and 50,000 square feet for Alternative 3. Except for age-restricted units, playgrounds would also be required.

Alternative 1 No Action: Parks

The No Action Alternative would not increase resident population in the study area and would therefore not contribute significantly to the citywide demand for parks and recreational facilities.

Alternative 2 Phased Action: Parks

The Phased Action Alternative will increase resident population in the study area and would create more demand for parks and recreational facilities and programs. The new residential units would require 25,000 square feet of open space. Commercial development would provide 50,000 square feet of public space in conjunction with commercial spaces.

Alternative 3 Planned Growth: Parks

The Planned Growth Alternative will increase resident population in the study area and would create more demand for parks and recreational facilities and programs. The new residential units would require 50,000 square feet of open space. Additional multifamily open space would be provided, and may overlap onsite recreation space. Commercial development would provide up to 100,000 square feet of public places.

Impacts Common to All Alternatives: Schools

Future residential development in the study area would increase demand for school services through the introduction of new families and students. The Office of Financial Management (OFM) estimates that in 2013, the Shoreline School District had an estimated 27,016 occupied housing units. Using the OSPI October 1st, 2013 student population numbers, the Shoreline School District has the following student generation rates:

- Elementary School Students (K-6th grade): 0.17/ housing unit
- Middle School Students (7th-8th Grade): 0.05/ housing unit
- High School Students (9th-12th Grade): 0.10/ housing unit

If carrying forward observed student generation rates, the number of students estimated by alternative is shown in Table 3-27.

Table 3-27. Number of School Students Generated by Alternative, 2013

	Alternative 1: No Action	Alternative 2: Phased Growth	Alternative 3: Planned Growth
Elementary School Students (K-6th Grade)	0	85	170
Middle School Students (7th-8th Grade)	0	25	50
High School Students (9th-12th Grade)	0	50	100

Source: OFM, 2013; OSPI, 2013; BERK, 2014.

The current student to teacher ratio is 17.3 students for every teacher. For the school district to maintain this ratio with the additional growth proposed in Alternatives 2 and 3, additional teachers may be needed.

It should be noted that multifamily developments typically generate fewer students per household than single family units. Multifamily units are proposed at the Aurora Square site. Using an average generation rate across all units is a conservative assumption for purposes of this EIS.

Alternative 1 No Action: Schools

The No Action Alternative will keep the study area as office and retail development. There would be no additional demand for educational services generated, and there would be no adverse impacts on local schools.

Alternative 2 Phased Action: Schools

Based on the number of proposed residential units and the District's student generation rate, Alternative 2 would result in 85 elementary school students, 25 middle school students, and 50 high school students. In order to maintain the current student to teacher ratio, the Shoreline School District would need to hire an additional 10 teachers and provide associated classroom space. However, depending on the timing of growth and the capacity of the system at the time, the School District may be able to absorb the growth.

Alternative 3 Planned Growth: Schools

Based on the number of proposed residential units and the District's student generation rate, Alternative 3 would result in 170 elementary school students, 50 middle school students, and 100 high school students. In order to maintain the current student to teacher ratio, the Shoreline School District an additional 19 teachers and space may be needed. However, depending on the timing of growth and the capacity of the system at the time, the School District may be able to absorb the students.

Mitigation Measures

Incorporated Plan Features

The Planned Action includes a proposed bike path from Aurora Square westward to the Shoreline Community College and nearby Highland Terrace Elementary School both of which have recreation facilities.

Applicable Regulations and Commitments

In SMC 20.50.240 Site Design, Subsection G, the City requires multifamily open space at a rate of 50 square feet per dwelling unit and a minimum of 800 square feet.

The City's commercial site design standards at SMC 20.50.240 Site Design, Subsection F, require public places within commercial portions of development at a rate of four square feet of public place per 20 square feet of net commercial floor area up to a public place maximum of 5,000 square feet.

Other Potential Mitigation Measures

Parks

The City of Shoreline does not charge park impact fees. The City of Shoreline could use a fee in lieu approach to redirect a portion of the onsite open space towards a more centrally located public space within or adjacent to the Aurora Square property. This approach is used in urban downtown neighborhoods in Burien and Redmond as shown in Table 3-28.

Table 3-28. Example Common and Private Open Space Standards

Jurisdiction / Zone	Threshold	Private Open Space	Common Open Space	Fee-In Lieu
Burien				
Downtown Commercial (DC) zone	4 multifamily units or more	Total amount of required private and common recreation space 260 sf/du		20 du + development can reduce on-site space by 50% and pay fee in lieu, annually calculated by formula – proposed dwellings X average land value per acre X the current ratio of citywide needed park acres per dwelling unit x 150%.
Redmond				
Downtown Residential Usable Open Space	All residential development	Patio – 80 sf/du Balcony – 50 sf/du	100 sf/du, up to max 20% of site Min total area 200 sf Not required for developments with 200 sf/du of private open space Can substitute indoor recreation space	Up to 50% of units can forego private open space and pay fee in lieu at 50% of park impact fee. Can pay in lieu fee for each 100 sf of common open space for parkland purchase and improvements in Downtown at 50% of park impact fee.

Notes: sf = single family; du = dwelling unit

Source: Code Publishing Company; BERK Consulting 2013

Schools

Both Alternative 2 and 3 would generate additional elementary, middle school and high school students to the Shoreline School District. The District is in the process of developing a Capital Facilities Plan to guide improvements to serve growth (Miller, 2014). The City of Shoreline does not charge school impact fees. The plan may be the basis for charging impact fees in the future.

Significant Unavoidable Adverse Impacts

Future population and employment growth in the study area will continue to increase demand for parks and school public services on a local level. With application of mitigation measures no significant unavoidable adverse impacts are anticipated.

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5.0 DISTRIBUTION LIST

5.1 Federal Agencies

National Marine Fisheries Service

United States Army Corps of Engineers

5.2 Tribes

Muckleshoot Indian Tribe Fisheries Division

Tulalip Tribe Department of Natural Resources

Tulalip Tribal Council

5.3 State and Regional Agencies

King County Department of Development and Environmental Services

King County Department of Natural Resources and Parks

Puget Sound Clean Air Agency

Puget Sound Regional Council

Snohomish County Planning and Development Services

Washington State Department of Commerce

Washington State Department of Ecology

Washington State Energy Facility Site Evaluation Council (EFSEC)

Washington State Department of Fish and Wildlife

Washington State Department of Health

Washington State Department of Natural Resources

Washington State Parks and Recreation Commission

Washington State Department of Transportation

5.4 Services, Utilities, and Transit

CleanScapes, Inc.

Comcast Cable

King County Transit Division

King County Wastewater Treatment Division

North City Water District

Ronald Wastewater District

Seattle City Light

Seattle/King County Health Department

Seattle Public Utilities

Shoreline Fire Department

Shoreline School District

Sound Transit

5.5 Community Organizations

Parkwood Neighborhood Group

Thornton Creek Alliance

Thornton Creek Legal Defense Fund

5.6 Newspapers

The Seattle Times

5.7 Adjacent Jurisdictions

City of Bothell

City of Edmonds

City of Kenmore

City of Lake Forest Park

City of Lynnwood

City of Mountlake Terrace

City of Seattle

Town of Woodway

5.8 Individuals

Shoreline residents and businesses in the Aurora Square vicinity.

APPENDIX A: SCOPING NOTICE

Notice of SEPA Threshold Determination and Scoping Notice

The City of Shoreline proposes to adopt a Planned Action Ordinance for the area known as the Aurora Square Community Renewal Area (CRA). The CRA is generally located at Aurora Avenue N and N 155th Street. The current land uses within the CRA include low-rise commercial uses such as Sears and Central Market and offices for Washington State Department of Transportation. The CRA is zoned Mixed-Business (MB) which allows commercial, retail, multi-family housing and any mix of residential/commercial uses. The CRA Planned Action will consider transportation impacts generated from potentially changing circulation patterns onsite as well as potentially changing the configuration of adjacent roadways such as the re-channelization of N. 160th Street, improvements to the Aurora Avenue/N. 160th Street intersection, improvements to the Westminster Way/N. 155th Street intersection, and potentially creating an alternative access point on Aurora Avenue to the CRA. The CRA Planned Action will also consider transportation facilities for transit, pedestrians, and bicycles to support redevelopment; identifying opportunities for better pedestrian access to and from the CRA; opportunities and incentives for low-impact and eco-district improvements; examining the application of the City's stormwater standards as well as the potential for an off-site regional facility addressing stormwater quantity; providing exceptional signage and wayfinding for the site; and creating "windows" to the site that will allow better interaction between pedestrians and businesses.

Scoping Comments: Agencies, affected tribes, and members of the public are invited to comment on the scope of the Planned Action EIS. You may comment on EIS Alternatives, issues that should be evaluated in the EIS, probable significant adverse impacts, mitigation measures, and licenses or other approvals that may be required. The method and deadline for providing scoping comments is:

Written Comments: Provide written comments on the scope of the Planned Action EIS no later than 5:00 p.m. on September 4, 2014. Comments may be sent to the Lead Agency Contact Person, Steven Szafran, AICP, Senior Planner at the City of Shoreline Planning & Community Development Department, 17500 Midvale Ave N, Shoreline, WA 98133 or via e-mail at sszafran@shorelinewa.gov.

Threshold Determination: The City of Shoreline has determined that the proposal will have a probable significant adverse impact on the environment and is issuing a Determination of Significance

Judicial Appeal: Any interested person may appeal a Determination of Significance (DS). Per SMC 20.30.680(3), an appeal must be filed in writing and, along with the filing fee, be received by the City Clerk prior to 5:00pm, September 4, 2014. An appeal must conform to the procedures set forth in SMC 20.30, Chapter 4.

Copies of the threshold determination and more specific information on project are available for review at the City Hall, 17500 Midvale Avenue N.

CITY OF SHORELINE

Planning & Community Development

STATE ENVIRONMENTAL POLICY ACT (SEPA) ENVIRONMENTAL CHECKLIST

Purpose of Checklist:

The State Environmental Policy Act (SEPA), chapter 43.21C RCW, requires all governmental agencies to consider the environmental impacts of a proposal before making decisions. An environmental impact statement (EIS) must be prepared for all proposals with probable significant adverse impacts on the quality of the environment. The purpose of this checklist is to provide information to help you and the agency identify impacts from your proposal (and to reduce or avoid impacts from the proposal, if it can be done) and to help the agency decide whether an EIS is required.

Instructions for Applicants:

This environmental checklist asks you to describe some basic information about your proposal. Governmental agencies use this checklist to determine whether the environmental impacts of your proposal are significant, requiring preparation of an EIS. Answer the questions briefly, with the most precise information known, or give the best description you can.

You must answer each question accurately and carefully, to the best of your knowledge. In most cases, you should be able to answer the questions from your own observations or project plans without the need to hire experts. If you really do not know the answer, or if a question does not apply to your proposal, write "do not know" or "does not apply". Complete answers to the questions now may avoid unnecessary delays later.

Some questions ask about governmental regulations, such as zoning, shoreline, and landmark designations. Answer these questions if you can. If you have problems, the governmental agencies can assist you.

The checklist questions apply to all parts of your proposal, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The agency to which you submit this checklist may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impact.

Public notice is required for all projects reviewed under SEPA. Please submit current Assessor's Maps/Mailing Labels showing:

- Subject property outlined in red.
- Adjoining properties under the same ownership outlined in yellow.
- All properties within 500' of the subject property, with mailing labels for each owner.

NOTE: King County no longer provides mailing label services. Planning and Development Services can provide this for a fee or provide you instructions on how to obtain this information and create a mail merge document to produce two sets of mailing labels for your application.

Use of Checklist for nonproject proposals:

Complete this checklist for nonproject proposals, even though questions may be answered "does not apply". IN ADDITION complete the SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS (part D).

For nonproject actions, the references in the checklist to the words "project," "applicant," and "property or site" should be read as "proposal," "propose," and "affected geographic area," respectively.

TO BE COMPLETED BY APPLICANT

EVALUATION FOR AGENCY USE ONLY

A. BACKGROUND

1. Name of proposed project, if applicable:

   Aurora Square Planned Action

2. Name of applicant:

City of Shoreline

3. Address and telephone number of application and contact person:

   City of Shoreline
   17500 Midvale Ave N
   Shoreline, Washington 98133
   (206) 801-2521

   Dan Eernissee
   Economic Development Manager
   206.801.2218
   deernissee@shorelinewa.gov

4. Date checklist prepared:

   July 15, 2014

5. Agency requesting checklist:

   City of Shoreline

6. Proposed timing or schedule (including phasing, if applicable):

   Planned Action adoption fall 2014
   Implementing redevelopment to occur over a period of years

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.

   The City intends to implement the 2013 Aurora Square Community Area (CRA) Renewal Plan, which contains a series of public activities and investments.

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.

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A Planned Action EIS will be prepared for the Aurora Square Planned Action.

The Planned Action EIS will be focused on land use, light and glare, transportation, utilities (stormwater, sewer and water), and public services (schools and parks). The analysis is being conducted in the context of previous SEPA documents, including:

- **City of Shoreline Comprehensive Plan, Final Environmental Impact Statement, November 1998**
- **Comprehensive Plan, Final EIS, November 1998**
- **North City Sub-Area Plan Planned Action Final SEIS, June 2001**
- **Town Center Subarea Planned Action Final Supplemental EIS, July 2011**
- **Updates to the City of Shoreline Comprehensive Plan, DNS and SEPA Checklist, September 2004**
- **City of Shoreline Transportation Master Plan (TMP), Development Code and Comprehensive Plan Amendments, Determination of Non-Significance (DNS) and SEPA Checklist, September 2011**
- **2012 Update to the Shoreline Comprehensive Plan Determination of Nonsignificance (DNS), September 2012**
- **Commercial Zone Consolidation Analysis, September 2012.**

The Planned Action EIS, will also be prepared in the context of adopted plans and regulations. The Shoreline Comprehensive Plan, functional plans (e.g. stormwater plans such as the Boeing Creek Basin Plan), and development regulations promote compact mixed use redevelopment where infrastructure is available, consistent with design standards, water quality and environmental protection regulations.

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If you, explain.

   None known.

10. List any government approvals or permits that will be needed for your proposal, if known.

    The proposal is a phased development implementing current zoning and the Aurora Square CRA Renewal Plan. The City is anticipated to approve a Planned Action ordinance identifying thresholds of development and mitigation measures. The CRA Planned Action will also consider transportation facilities for transit, pedestrian, and bicycles to support redevelopment; identifying opportunities for better pedestrian access to and from the CRA; opportunities

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and incentives for low-impact and eco-district improvements; providing exceptional signage and wayfinding for the site; and creating "windows" to the site that will allow better interaction between pedestrians and businesses.

11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.)

The City desires to facilitate growth consistent with the Aurora Square CRA Renewal Plan. The CRA is about 70 acres in size, and the intent is for a revitalized shopping center with entertainment, gathering spaces, and other community activities:

Imagine an open, green plaza in the center of Shoreline, filled with sunbathing and studying students, young families watching their children run and play, an elderly couple enjoying a Central Market picnic, dogs wagging their tails, actors practicing their lines, and the sound of college-age buskers singing with an occasional clink as coins fall into a hat.

This is the backdrop to the busy comings and goings of shoppers and lunching workers who relish the time of their day that allows them to visit the renewed Aurora Square shopping center. It is a "one-stop" convenient shopping solution that provides dining, nightlife, and healthy-lifestyle options. It is a community gathering place, where a leg stretching walking easily turns into a serendipitous rendezvous with friends.

The City of Shoreline is seeking public and private partners to help with select targeted investments in the Aurora Square CRA. The goal of the investment is to attract over $200 million of private construction, to create a new job center, to generate many times the area's current tax revenue, and to provide an attractive community gathering place.

The following list represents the projects identified to date:

- **Master Planning the Site. The Aurora Square area is owned by several different property owners, and only the city is in a position to undertake area-wide master planning through such tools as a Planned Action Environmental Impact**

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Statement. By taking a cohesive, area-wide approach to planning we will provide a vision of the opportunities a renewed center hold. In addition, we will be reassuring and even rewarding private enterprise when it builds.

- **A New Internal Trunk Road. The connectivity challenges of Aurora Square need to be addressed with an internal trunk road that creates a smaller grid and connects currently underutilized parts of the site. The new road would connect the intersection of Westminster Way N and 155th through the site to 160th, thereby providing multi-modal connectivity. At the same time, the trunk road would provide the ideal place for stormwater, water, sewer, power, and fiber network infrastructure.**
- **Eco-District Improvements. Aurora Square opened in 1967, long before environmentally responsible efforts such as stormwater management were known or appreciated. The Aurora Square area, though, represents enough critical mass that cost-effective regional eco-district infrastructure improvements can be achieved. This enables the possibility of cooperative, progressive approaches to stormwater, wastewater, solid waste, and energy generation that are not only symbolic, but also profitable.**
- **Transit-Oriented Development. King County Metro has launched its *RapidRide* transit service on Aurora Avenue this year, and the Aurora Square area is ideally situated to take advantage of the investment with transit-oriented development. Possibilities for effective development include making Aurora Square the recognized and connected transit hub for the area, consolidate park-and-ride stalls located elsewhere, and building employment and residential structures onsite.**
- **Privatization of Surplus WSDOT Property. The regional headquarters of WSDOT sits on over 15 acres of land. By simply building a parking structure, WSDOT's long-range expansion plans can be realized while still repurposing at least five surplus acres as a privately-owned job center. The parking structure could also provide complementary parking for the retail center during peak parking periods on weekends and evenings. The job center would ideally take advantage of Shoreline Community College's vocational training expertise and form the nucleus of a new industry cluster.**
- **Making Westminster Walkable. The one internal road in the area, Westminster Way N, acts as a high-speed through-route that divides the center into two distinct sides. As a result, the smaller triangular property that fronts busy Aurora Avenue is cut off from the synergy of the anchor tenants to the west; as**

a result, long-term vacancy has plagued the triangular property that should instead serve as the center's heart with its connectivity to bus rapid transit, the Interurban Trail, and the visibility of Aurora Avenue. Transforming Westminster Way N by changing it from a vehicle-oriented through-route into a quaint, pedestrian-friendly, store-lined village street will simultaneously reconnect the two sides of Westminster while providing attractive internal pedestrian connectivity for the entire center.

- **Providing an Entry for the College. The stretch of N 160th Street between Aurora Ave N and Greenwood Ave N provides the entry for Shoreline Community College's 9,000+ students. However, it is both inhospitable to those who use it and without indication that it connects busy Aurora Avenue to such a valuable asset. Therefore, putting N 160th Street on a "road diet," installing bike and pedestrian amenities, and rebranding the street to reflect its importance will promote safer travel, energize the college, and bring valued shoppers directly to the Aurora Square area.**
- **Rebranding Aurora Square. While "Aurora Square" is used currently as the working name for the area, rebranding will allow the area to reflect the renewed energy and direction of the center.**

One of the mechanisms the City proposes to use to spur private development includes a Planned Action Environmental Impact Statement (EIS). A Planned Action provides more detailed environmental analysis during formulation of planning proposals rather than at the project permit review stage. The basic steps in designating a Planned Action are to prepare an EIS, designate the Planned Action area and projects by ordinance, and review permit applications for consistency with the ordinance (see RCW 43.21C.440 and WAC 197-11-164 to 172).

The proposed Planned Action Ordinance will be based on the Aurora Square Renewal Plan, which constitutes a phased conceptual master plan.

With redevelopment of the site, 500 to 1,000 additional residential units and about 500,000 square feet of additional retail and office space are anticipated. Two alternatives will be reviewed in the EIS. One alternative will evaluate maximum development potential and one alternative will evaluate a more moderate growth scenario.

12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a

proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.

The study area is approximately 70 acres in size and located at the intersection of N. 155th Street & Aurora Ave N. A study area map is provided below. The site is bounded by N 160th Street to the north, Aurora Avenue N to the east, Westminster Way, Fremont Avenue N and N 155th Street to the South, and Dayton Avenue N to the west.

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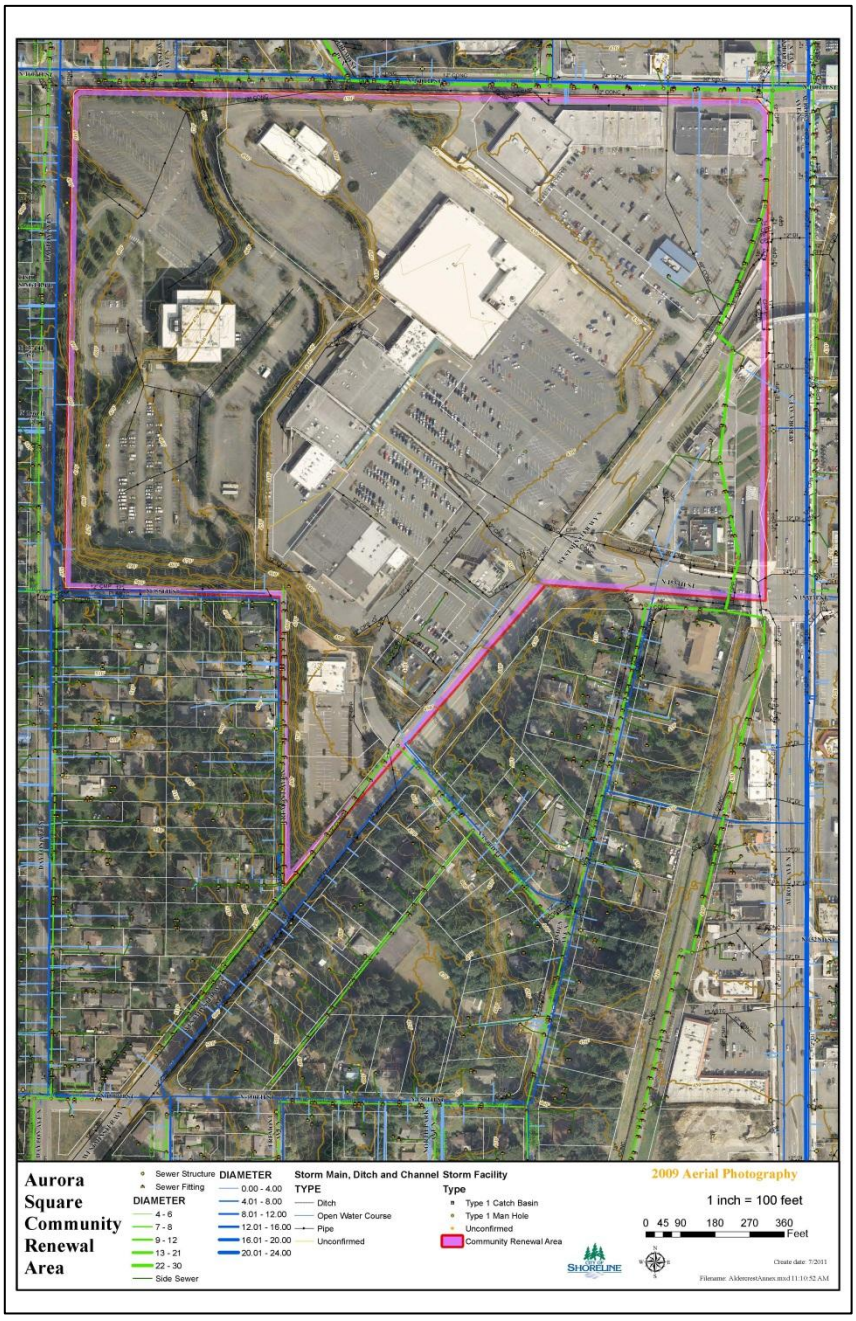
B. ENVIRONMENTAL ELEMENTS

1. Earth

   a. General description of the site (circle one): Flat, rolling, hilly, steep slopes, mountainous, other …

The site is generally flat. A map of the topography is shown below.



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b. What is the steepest slope on the site (approximate percent slope)?

Landslide mapping included in the Comprehensive Plan shows the majority of the site is between 0-15% in slope. Small portions of the site have greater slopes. (City of Shoreline 2012)

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any agricultural land of long-term commercial significance and whether the proposal results in removing any of these soils.

Specific soil types are not known; however lands are in use for urban, non-agricultural purposes. At the time of building permit requests, the International Building Code includes conditions under which preparation of a geotechnical report would be required.

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

See "b" above.

e. Describe the purpose, type, total area, and approximate quantities and total affected area of any filling, excavation, and grading proposed. Indicated source of fill.

At the time of site redevelopment, there may be fill and grade proposals, such as for below grade parking. Future development will be subject to SMC Chapter 20.50 General Development Standards, Subchapter 5. Tree Conservation, Land Clearing and Site Grading Standards.

f. Could erosion occur as a result of clearing construction, or use? If so, generally describe.

The erosion potential of future site construction activities is anticipated to be low given the largely impervious site and the application of erosion control standards in SMC 13.10.200 Adoption of Stormwater Management Manual.

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

With the exception of ornamental landscaping, the site is impervious.

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It is anticipated with redevelopment and compliance with the City's stormwater requirements, stormwater quality would improve.

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:

Future development will be subject to SMC Title 20 Subchapter 5. Tree Conservation, Land Clearing and Site Grading Standards, found in Chapter 20.50 General Development Standards and will be subject to erosion control standards in SMC 13.10.200 Adoption of Stormwater Management Manual.

No further review will be conducted in the EIS.

2. Air

a. What types of emissions to the air would result from the proposal during construction, operation, and maintenance when the project is completed? If any, generally describe and give approximate quantities if known.

Development proposals within the study area are anticipated to follow adoption of the plan and associated development regulations. Short-term air emissions including construction equipment exhaust and fugitive dust may occur during the construction phase for new development. Hauling routes and local streets could be impacted by dust if mitigation measures are not implemented, but all construction projects will be consistent with the City's erosion control development standards.

The intent of the plan is to encourage a mixture of residential and commercial uses to reduce the need for daily-needs vehicle trips and create opportunities for living and working in close proximity. Further, the plan envisions pedestrian improvements to encourage walking. Mixed use development has been shown to reduce vehicle miles travelled which can reduce greenhouse gas emissions (US EPA March 2010 draft paper Smart Growth: A Guide to Development and Implementing Greenhouse Reduction Programs).[1]

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.

[1] As quoted in the US EPA 2011 paper Smart Growth: A Guide to Development and Implementing Greenhouse Reduction Programs, "[c]ompact development reduces the need to drive by putting destinations closer together and making walking, biking, and using mass transit easier. Any given increment of compact development could reduce VMT [vehicle miles traveled] up to 20 to 40 percent compared to dispersed development on the outer fringe of an urban area."

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There are no known sources of emissions or odor in the vicinity of the study area that may affect the plan.

c. Proposed measures to reduce or control emissions or other impacts to air, if any:

Development is subject to applicable federal (EPA), regional (PSCAA), and State (DOE) air quality regulations. Washington DOE air quality regulations applicable to the study area are found at Chapter 173-400 WAC. Particularly relevant air quality regulations relating to redevelopment are included below:

- **Construction activity must comply with Puget Sound Clean Air Agency (PSCAA) regulations requiring reasonable precautions to minimize dust emissions (Regulation I, Section 9.15).**
- **Stationary equipment used for the construction activities must comply with PSCAA regulations requiring the best available measures to control the emissions of odor-bearing air contaminants (Regulation I, Section 9.11).**
- **Commercial facilities could use stationary equipment that emits air pollutants (e.g., fumes from gas stations, ventilation exhaust from restaurants, and emissions from dry cleaners). These facilities would be required to register their pollutant-emitting equipment with PSCAA (Regulation I and Regulation II). PSCAA requires all commercial and industrial facilities to use the Best Available Control Technology (BACT) to minimize emissions. The agency may require applicants for high-emission facilities to conduct an air quality assessment to demonstrate that the proposed emissions would not expose offsite areas to odors or air quality concentrations exceeding regulatory limits.**
- **Transportation roadway projects must be included in the Regional Transportation Plan (RTP) or TIP prior to start of construction to show that they conform to the Puget Sound region's Air Quality Maintenance Plans and would not cause or contribute to regional exceedances of the federal standards. Once included in the RTP or TIP, the projects must meet all transportation conformity requirements and demonstrate regional conformity.**
- **Project-Level Transportation Conformity Analyses for Future Roadway and Intersection Improvements: As part of future project-specific NEPA documentation for individual new roadway improvement projects, the City would be required to conduct CO hot-spot modeling (as required under WAC 173-420) to demonstrate that the projects would not cause localized impacts related to increased CO emissions from**

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vehicle tailpipes at congested intersections.

No new impacts of a nature or severity that will not be adequately addressed by applicable regulations and existing mitigating measures are anticipated. No further review will be conducted in the EIS.

3. Water

a. Surface:

1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.

A piped stream is located along the northern study area boundary.

2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.

A piped stream is located along the northern study area boundary.

3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicated the source of fill material.

Not applicable. There are no open channel streams or wetlands.

4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known.

Not applicable. No surface water withdrawals or diversions are proposed.

5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.

Not applicable. The site is not located in a 100-year floodplain.

6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.

Not applicable. Discharge of waste material is not proposed.

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Redevelopment of the site and implementation of water quality and stormwater management measures is anticipated to result in improvement of stormwater quality over present conditions.

b. Ground:

1) Will ground water be withdrawn from a well for drinking water, or other purposes? If so, give a general description of the well, proposed uses and approximate quantities withdrawn from the well? Will water be discharged to ground water? Give general description, purpose, and approximate quantities if known.

No groundwater withdrawals are proposed.

2) Describe waster material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals …; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (fi applicable), or the number of animals or humans the system(s) are expected to serve.

No waste discharge is proposed. See 3.a.6.

c. Water runoff (including stormwater):

1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.

The site is mostly impervious. However, with application of stormwater standards and redevelopment opportunities additional stormwater quality measures will be implemented.

2) Could waste materials enter ground or surface waters? If so, generally describe.

No waste discharge is proposed. See 3.a.6.

3) Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe.

The site is largely impervious and future redevelopment would comply with the City's stormwater requirements in place at the time of application. The EIS would examine the application of the City's

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stormwater standards as well as the potential for an off-site regional facility addressing stormwater quantity. Stormwater quality standards would be addressed onsite.

d. Proposed measures to reduce or control surface, ground, runoff water, and drainage pattern impacts, if any:

Future development would be subject to SMC 13.10.200 Adoption of Stormwater Management Manual as well as any basin-specific standards appropriate to mitigate stormwater quantity and quality effects (e.g. Boeing Creek Basin Plan 2013). Further piped streams are required to have a 10 foot buffer; voluntary proposals to open piped watercourses are encouraged. See SMC 20.80.480.

The EIS will summarize present standards and consider the potential for an off-site regional facility.

4. Plants

a. Check the types of vegetation found on the site:

_X_ deciduous tree: alder, maple, aspen, other
_X_ evergreen tree: fir, cedar, pine, other
_X_ shrubs
_X_ grass
__ pasture
__ crop or grain
__ Orchards, vineyards or other permanent crops.
__ wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other
__ water plants: water lily, milfoil, other
_X_ other types of vegetation: ornamental plants used in landscaping

A small portion of the site on the southwest is shown as Urban Forest in the Comprehensive Plan Natural Environment Supporting Analysis maps. (City of Shoreline 2012)

b. What kind and amount of vegetation will be removed or altered?

The site is largely impervious with some trees and ornamental landscaping. With redevelopment the location of landscaping may change. City landscape standards will be implemented.

c. List threatened and endangered species known to be on or near the site.

The site is in an urban area and is largely impervious. No threatened or endangered species are known on the site.

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d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:

Future development will comply with:

- **SMC Title 20 Subchapter 5. Tree Conservation, Land Clearing and Site Grading Standards of Chapter 20.50 General Development Standards.**
- **SMC Title 20 Subchapter 7. Landscaping of Chapter 20.50 General Development Standards.**

No further review will be conducted in the EIS.

e. List all noxious weeds and invasive species known to be on or near the site.

Noxious weeds and invasive species are not known to occur on the site, which is developed for urban uses and has ornamental landscaping.

5. Animals

a. List any birds and other animals that have been observed on or near the site or are known to be on or near the site. Examples include::

Likely species adapted to an urban environment are underlined below.

Birds: hawk, heron, eagle, songbirds, other
Mammals: small rodents, beaver, other
Fish: salmon, trout, other

b. List any threatened and endangered species known to be on or near the site.

The site is in an urban area and is largely impervious. No threatened or endangered species are known on the site.

c. Is the site part of a migration route? If so, explain.

None known on this urban developed site.

d. Proposed measures to preserve or enhance wildlife, if any:

No impacts are anticipated. If protected wildlife is subsequently identified, they would be subject to Chapter 20.80 Critical Areas.

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No further review will be conducted in the EIS.

e. List any invasive animal species known to be on or near the site.

No invasive animal species are known to be on or near the site.

6. Energy and natural resources

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.

The study area is served by electricity and natural gas. Energy is primarily used for heating. The CRA plan proposes a concept of an eco-district and low-impact development practices that can be cost-effectively implemented (such as thermal heating via circulated water). The Planned Action would consider incentives to entice new development to implement eco-district and low impact development practices.

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.

The proposal will not directly affect the potential use of solar energy by adjacent properties. However, the proposal may facilitate development consistent with zoned heights that are taller than present structures.

c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:

The City has adopted the current edition of the Washington State Energy Code in SMC 15.05.010.

Based on adopted policies and regulations, and the above mitigation measure, impacts to environmental health hazards can be mitigated to a level of insignificance. No further review will be conducted in the EIS.

7. Environmental health

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste that could occur as a result of this proposal? If so, describe.

New development of specific parcels will be subject to City zoning for

allowable uses and activities, and City codes for handling hazardous materials as well as State and Federal hazardous materials regulations.

There is a current auto use at the property (Sears Auto Center).

1) Describe any known or possible contamination at the site from present or past uses.

See "a" above.

2) Describe existing hazardous chemicals/conditions that might affect project development and design. This includes underground hazardous liquid and gas transmission pipelines located within the project area and in the vicinity.

See "a" above.

3) Describe any toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction, or at any time during the operating life of the project.

See "a" above.

4) Describe special emergency services that might be required.

Increased intensity of land use in the study area that may occur following adoption of the plan and associated development regulations may increase the overall demand for police and fire services.

5) Proposed measures to reduce or control environmental health hazards, if any:

Future site-specific activities will comply with City building, fire, and land use codes, as well as State and federal hazardous materials regulations.

It is recommended that the Planned Action Ordinance incorporate the following mitigation measure:

- **Applicants for development shall conduct a site assessment to determine if contamination is present from past use.**

Based on adopted policies and regulations, and the above mitigation measure, impacts to environmental health hazards can be mitigated

to a level of insignificance. No further review will be conducted in the EIS.

b. Noise

1) What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?

Traffic noise Aurora Avenue N exists.

2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site.

Land development that may occur following adoption of the plan and associated development regulations will create short-term noise impacts to land uses in the vicinity. Construction noise impacts will comply with SMC Chapter 9.05 Public Disturbance Noise relating to hours of construction. Noise impacts resulting from increases in traffic volumes generated within the study area are anticipated to be negligible relative to the impacts generated by background traffic volumes.

3) Proposed measures to reduce or control noise impacts, if any:

Maximum environmental noise levels are regulated by the State of Washington (Chapters 173-58 through 62 WAC). Construction noise levels will comply with SMC Chapter 9.05 Public Disturbance Noise. Nuisance noise impacts are also regulated under SMC Chapter 9.05 Public Disturbance Noise.

Compliance with State and local noise regulations is anticipated to mitigate impacts to a level of non-significance. No further review will be conducted in the EIS.

8. Land and shoreline use

The Planned Action EIS will review current and planned land use patterns, land use compatibility and activity levels, and population/employment capacity of the alternatives; describe affordable housing objectives in relation to Housing Element and Countywide Planning Policies; and describe the relationship of the CRA to the City's Comprehensive Plan including policy or code provisions that serve as mitigation measures.

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EVALUATION FOR AGENCY USE ONLY

a) What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe.

Most of the study area is in commercial use with a shopping center and surface parking. See example photo below.

The western portion of the site contains offices of the Washington State Department of Transportation.

Surrounding uses include multifamily to the north, commercial to the north and east, and single family residential to the south and west.

b) Has the project site been used as working farmlands or working forest lands? If so, describe. How much agricultural or forest land of long-term commercial significance will be converted to other uses as a result of the proposal, if any? If resource lands have not been designated, how many acres in farmland or forest land tax status will be converted to nonfarm or nonforest use?

Not applicable.

1) Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversize equipment access, the application of pesticides, tilling, and harvesting? If so, how:

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EVALUATION FOR AGENCY USE ONLY

Not applicable.

c) Describe any structures on the site.

The site presently contains a shopping center with department stores, a grocery store, line retail, banking, restaurants, and other uses. The western portion of the site contains offices of the Washington State Department of Transportation.

d) Will any structures be demolished? If so, what?

Implementation of the CRA plan would, together with present zoning, encourage more intensive mixed use development.

e) What is the current zoning classification of the site?

The site is zoned Mixed Business.

f) What is the current comprehensive plan designation of this site?

The Comprehensive Plan designation is Mixed Use 1.

g) If applicable, what is the current shoreline master program designation of the site?

Not applicable.

h) Has any part of the site been classified as a critical area by the city or county? If so, specify.

The Natural Environment Supporting Analysis in the Comprehensive Plan identifies a piped stream along the northern property boundary. (City of Shoreline 2012)

i) Approximately how many people would reside or work in the completed project?

The residential and employment capacity of the site will be addressed in the EIS.

j) Approximately how many people would the completed project displace?

Residential and employment characteristics will be addressed in the EIS. While the form of development may change, it is likely that commercial and office uses could continue on the site, but housing and other public amenities would be added.

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EVALUATION FOR AGENCY USE ONLY

k) Proposed measures to avoid or reduce displacement impacts, if any:

This topic would be addressed in the EIS. It should be noted that the zoning is not changing. Market conditions together with continued mixed use zoning and the CRA incentives would determine the future redevelopment of the property. While the form of development may change, it is likely that commercial and office uses could continue on the site, but housing and other public amenities would be added.

l) Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:

The EIS Land Use section will identify policy or code provisions that serve as mitigation measures.

m) Proposed measures to ensure the proposal is compatible with nearby agricultural and forest lands of long-term commercial significance, if any:

Not applicable.

9. Housing

a) Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.

The proposal is anticipated to result in an increase in housing units within the study area. New housing is expected to be in the form of multi-family or mixed-use development. Redevelopment would include housing for a mix of income levels.

The EIS will contain information on the specific amount of new housing provided.

b) Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.

None. There is no existing housing presently.

c) Proposed measures to reduce or control housing impacts, if any:

Any housing proposed for the study area will be in compliance with the City of Shoreline Title 20 SMC, Development Code, and Title 15 SMC, Buildings and Construction.

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EVALUATION FOR AGENCY USE ONLY

The Land Use section of the EIS will address land use patterns capacity for dwellings.

10. Aesthetics

a) What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?

The Base Height of the zone is 60 feet. SMC Title 20 Development Code makes some allowances for some appurtenances or certain uses to exceed this height.

b) What views in the immediate vicinity would be altered or obstructed?

The view of the property from Aurora Avenue N could change from a low rise shopping center to an intensive mixed use center.

c) Proposed measures to reduce or control aesthetic impacts, if any:

Future development will be subject to design and landscape requirements of SMC Chapter 20.50 General Development Standards.

11. Light and glare

a) What type of light or glare will the proposal produce? What time of day would it mainly occur?

Ambient light and glare are produced from a number of different sources, including exterior building illumination, business identification signs, vehicle headlights, and street lamps. Vehicle headlights are not within the scope of City regulations.

The potential light and glare effects regarding signs that may be installed with proposed sign code changes would be addressed in the EIS.

b) Could light or glare from the finished project be a safety hazard or interfere with views?

Lighting from redevelopment of the study area would not be a safety hazard, and would comply with all City regulations regarding outdoor lighting (see 11.c. below). Lighting from redevelopment in the study area would be consistent with other developed portions of the City.

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EVALUATION FOR AGENCY USE ONLY

c) What existing off-site sources of light or glare may affect your proposal?

Light and glare from Aurora Avenue N may impact development sites that are located closest to the corridor. Other existing sources of light in the vicinity of the study area, such as street and building lights, are not anticipated to affect future land uses within the area.

d) Proposed measures to reduce or control light and glare impacts, if any:

SMC 20.50.115 "Lighting – Standards" addresses outdoor lighting. Based on adopted policies and regulations, impacts to light and glare from buildings can be mitigated to a level of non-significance. The potential light and glare effects of signs that may be installed due to sign code amendments would be addressed in the EIS including any code features that minimize potential impacts.

12. Recreation

a) What designated and informal recreational opportunities are in the immediate vicinity?

To the east of the site, the Interurban Trail parallels Aurora Avenue N.

b) Would the proposed project displace any existing recreational uses? If so, describe.

No public recreation exists on site.

c) Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:

The CRA Renewal Plan promotes community gathering spaces to be incorporated on site. Chapter 20.50 General Development Standards includes provisions for appropriate site design and landscaping. For example in developments near a corner, public spaces are encouraged as a corner treatment. Also, public places are required at a rate of 1,000 square feet per acre up to a maximum of 5,000 square feet. Multifamily development is also required to provide 800 square feet per development or 50 square feet of open space per dwelling unit, whichever is greater. The potential demand for parks and recreation and the application of City code requirements would be addressed in the EIS.

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EVALUATION FOR AGENCY USE ONLY

13. Historic and cultural preservation

a) Are there any buildings, structures, or sites, located on or near the site that are over 45 years old listed in or eligible for listing in national, state, or local preservation registers located on or near the site? If so, specifically describe.

Based on a 2013 Historic Property Inventory, there are no historic structures in the study area. (Sheridan Consulting Group, December 2013)

b) Are there any landmarks, features, or other evidence of Indian or historic use or occupation. This may include human burials or old cemeteries. Are there any material evidence, artifacts, or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources.

The site was developed for commercial and institutions uses in the late 1960s. Given the altered nature of the study area with buildings and impervious area and a piped stream it is unlikely that cultural resources are located at the site. However, if the site is redeveloped and historic or cultural resources are discovered, state and federal laws will allow for a site assessment, potential mitigations, and appropriate protective measures.

c) Describe the methods used to assess the potential impacts to cultural and historic resources on or near the project site. Examples include consultation with tribes and the department of archeology and historic preservation, archaeological surveys, historic maps, GIS data, etc.

Sources included a 2013 Historic Property Inventory (Sheridan Consulting Group, December 2013).

d) Proposed measures to avoid, minimize, or compensate for loss, changes to, and disturbance to resources. Please include plans for the above and any permits that may be required.

Washington State has a number of laws that oversee the protection and proper excavation of archaeological sites (RCW 27.53, WAC 25-48), human remains (RCW 27.44), and historic cemeteries or graves (RCW 68.60). The Governor's Executive Order 05-05 requires state agencies to integrate DAHP, the Governor's Office of Indian Affairs, and concerned tribes into their capital project planning process. This executive order affects any capital construction projects and any land acquisitions for purposes of capital construction not

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EVALUATION FOR AGENCY USE ONLY

undergoing Section 106 review under the National Historic Preservation Act of 1966.

Under RCW 27.53, the Department of Archaeology and Historic Preservation (DAHP) regulates the treatment of archaeological sites on both public and private lands and has the authority to require specific treatment of archaeological resources. All precontact resources or sites are protected, regardless of their significance or eligibility for local, state, or national registers. Historic archaeological resources or sites are protected unless DAHP has made a determination of "not-eligible" for listing on the WHR and the NRHP.

The City does implement Chapter 15.20 Landmarks Preservation.

14. Transportation

A traffic analysis, scheduled for completion in 2014, is needed to determine how best to improve multi-modal access to Aurora Square as well as circulation on site; the analysis will also support the Planned Action EIS. Transportation projects would be developed for the CRA as part of the traffic study. The study will include the following Intersections and corridors:

- **N 160th Street and Greenwood Avenue N**
- **N 160th Street and Dayton Avenue N**
- **N 160th Street and Aurora Avenue N**
- **Westminster Way N and Greenwood Avenue N**
- **Westminster Way N and Dayton Avenue N**
- **Westminster Way N and N 155th Street**
- **Westminster Way N and Aurora Avenue N**
- **N 155th Street and Aurora Avenue N**
- **N 155th Street from Westminster Way N to Aurora Avenue N**
- **N 160th Street from Greenwood Avenue N to Aurora Avenue N**
- **Westminster Way N from Greenwood Avenue N to Aurora Avenue N**

a) Identify public streets and highways serving the site or affected geographic area, and describe proposed access to the existing street system. Show on site plans, if any.

The site is bounded by N 160th Street to the north, Aurora Avenue N to the east, Westminster Way, Fremont Avenue N and N 155th Street to the South, and Dayton Avenue N to the west.

b) Is the site or affected geographic area currently served by public transit? If so, generally describe. If not, what is the approximate distance to the nearest transit stop?

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The site is served by transit. This topic will be addressed in the EIS.

c) How many additional parking spaces would the completed project or nonproject proposal have? How many would the project or proposal eliminate?

Parking will comply with City development regulations. This topic will be addressed in the EIS.

d) Will the proposal require any new improvements to existing roads, streets, pedestrian, bicycle or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private).

This topic will be addressed in the EIS. The CRA Renewal Plan identifies some circulation improvements. Also see the discussion of the EIS analysis under 14 above.

e) Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.

Not applicable. Aircraft may fly overhead, however.

f) How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and nonpassenger vehicles). What data or transportation models were used to make these estimates?

This topic will be addressed in the EIS.

g) Will the proposal interfere with, affect or be affected by the movement of agricultural and forest products on roads or streets in the area? If so, generally describe.

Not applicable in this urban environment.

h) Proposed measures to reduce or control transportation impacts, if any:

This topic will be addressed in the EIS.

15. Public Services

a) Would the project result in an increased need for public services (for example: for protection, police protection, public transit,

health care, schools, other)? If so, generally describe.

Redevelopment would increase growth and demand for police and fire protection. Considering the City's ability to address these topics with its operational and capital budgets and through regulations, these topics will not be further addressed in the EIS (see mitigation in section b below).

Additional housing units may increase the demand for parks and schools. The EIS will address the compatibility of the CRA Planned Action Alternatives with parks and school capital plans and implementing regulations as described in Checklist Section 12.

b) Proposed measures to reduce or control direct impacts on public services, if any.

As development occurs, revenues would likely increase allowing the City to determine the appropriate distribution of funds towards municipal services such as police. Development will also be subject to City standards, including Chapter 20.60 Adequacy of Public Facilities addressing fire protection and the International Fire Code.

16. Utilities

a) Circle (underline) utilities currently available at the site: electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other.

b) Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity that might be needed.

General Utility Analysis: Future development would be supported by the same utilities as in Subsection 16.a. Greater growth would create a greater demand for power and energy, sewer and water; utility lines may need upgrades or relocation as appropriate.

Sewer Service: The Ronald Sewer District provides sewer service to the study area. The District anticipates greater population and job growth all along the Aurora Corridor including the study area as shown below.

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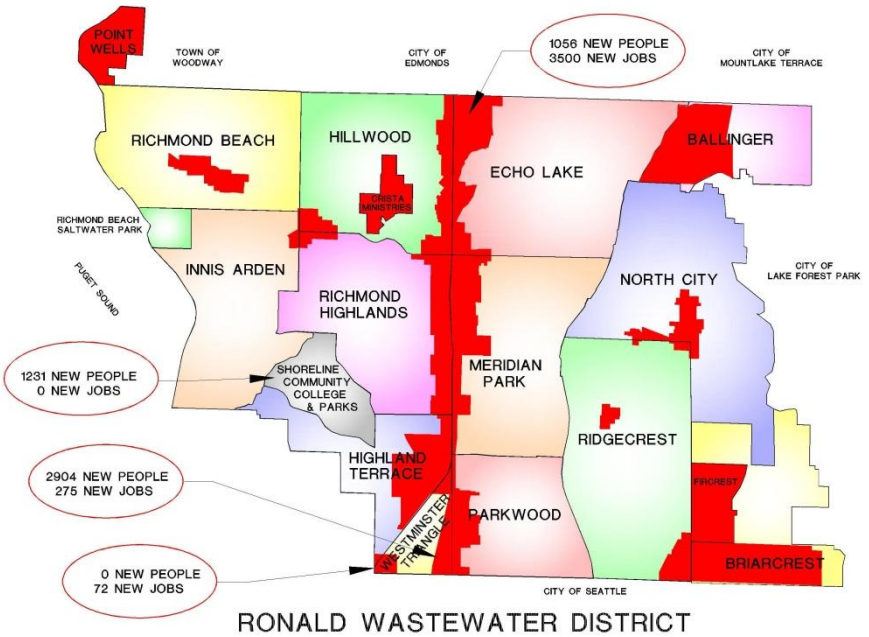
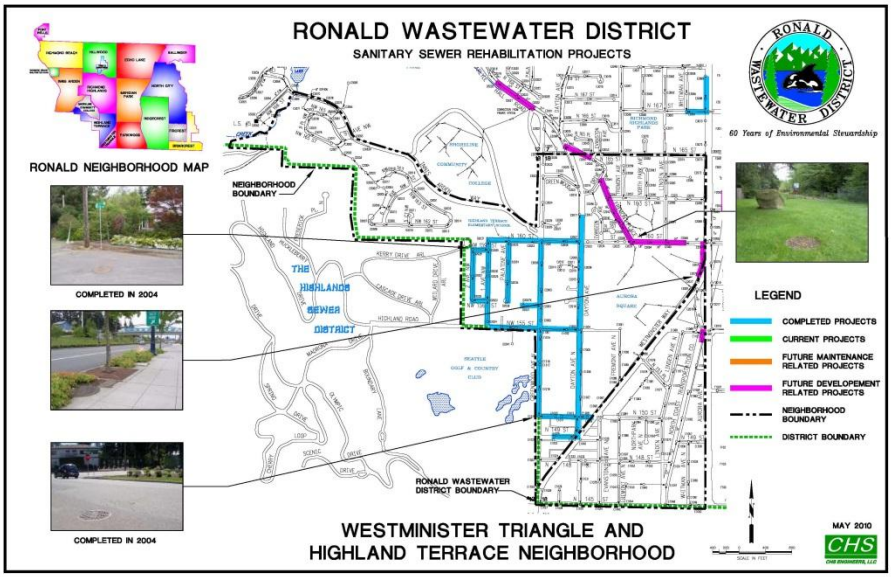


RONALD WASTEWATER DISTRICT
DESIGNATED GROWTH AREAS

The District has also completed or planned for new facilities to serve development in the study area per the diagram below. The ability of the district to serve the planned level of growth in the study area and any phasing or regulatory requirements would be addressed in the EIS.



Water Service: The Water Service provider is Seattle Public Utilities (SPU). SPU has adopted a water system plan and considered City of

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Shoreline Zoning as of 2012 to help determine system needs; city zoning indicated a mixed use designation for the subject property (SPU Water System Plan 2013; appendix D). SPU design standards indicate that fire flow is determined based on the City's Fire Code and considered when issuing Water Availability Certificates: The City of Seattle, City of Shoreline and King County have adopted the International Fire Code (IFC). Site specific fire flow requirements as determined by the appropriate Fire Marshall are used when issuing Water Availability Certificates and sizing of new water mains.
The ability of the service providers to serve the site and in particular the determination of fire flow requirements would be addressed in the EIS.

Mitigation Measures: Future development will be subject to City development standards including Chapter 20.60 Adequacy of Public Facilities, addressing water and sewer. Further the special districts have requirements to determine availability of services at the time of development (i.e. Certificates of Availability). Also see Section 6 regarding the City's energy code.

C. SIGNATURE

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature: Lisa Grueter

Lisa Grueter, BERK Consulting

Date Submitted: July 15, 2014

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D. SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS

1. How would the proposal be likely to increase discharge to water; emissions to air; production, storage, or release of toxic or hazardous substances; or production of noise?

   See sections 1, 2, 3 and 7.

Proposed measures to avoid or reduce such increases are:

   See sections 1, 2, 3 and 7.

2. How would the proposal be likely to affect plants, animals, fish, or marine life?

   See Sections 4 and 5.

Proposed measures to protect or conserve plants, animals, fish or marine life are:

   See Sections 4 and 5.

3. How would the proposal be likely to deplete energy or natural resources?

   See Section 6.

Proposed measures to protect or conserve energy and natural resources are:

   See Section 6.

4. How would the proposal be likely to use or affect environmentally sensitive areas or areas designated (or eligible or under study) for governmental protection; such as parks, wilderness, wild and scenic rivers, threatened or endangered species habitat, historic or cultural sites, wetlands, floodplains, or prim farmlands?

   See Sections 4, 5, and 8.

Proposed measures to protect such resources or to avoid or reduce impacts are:

   See Sections 4, 5, and 8.

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EVALUATION FOR AGENCY USE ONLY

5. How would the proposal be likely to affect land and shoreline use, including whether it would allow or encourage land or shoreline uses incompatible with existing plans?

   See Section 8.

Proposed measures to avoid or reduce shoreline and land use impacts are:

See Section 8.

How would the proposal be likely to increase demands on transportation or public services and utilities.

See Sections 12, 14, 15 and 16.

Proposed measures to reduce to respond to such demands(s) are:

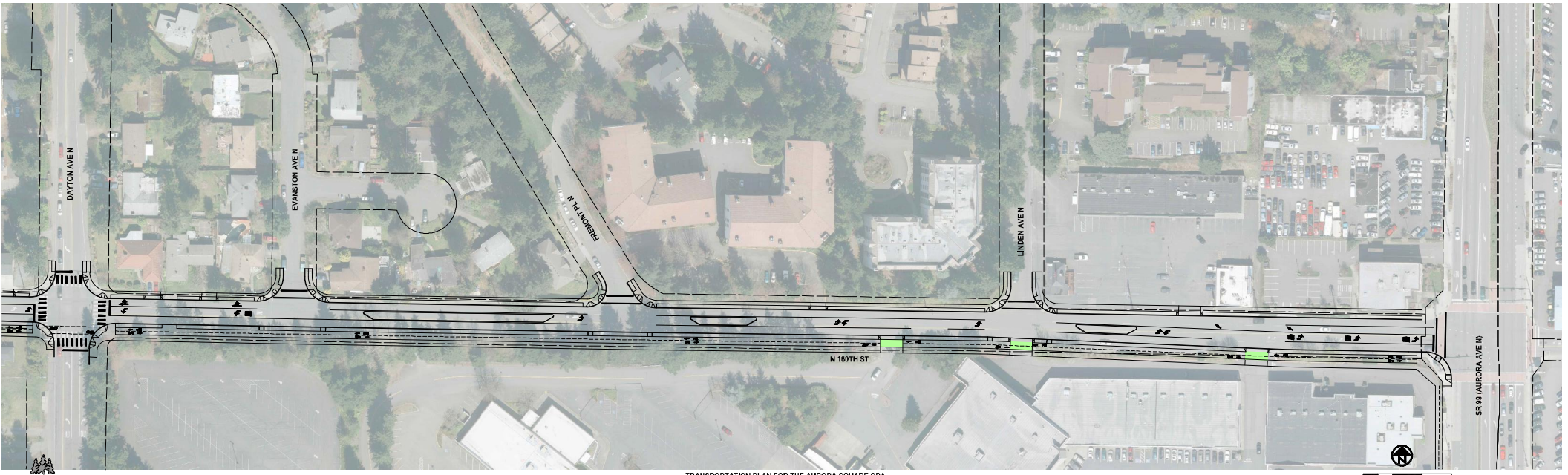
See Sections 12, 14, 15 and 16.

7. Identify, if possible, whether the proposal may conflict with local, state, or federal laws or requirements for the protection of the environment.

   The Comprehensive Plan and zoning are not changing and the CRA promotes a mixed use development consistent with those plans and regulations. All future development would comply with federal, state and local laws including environmental regulations, if applicable given the developed urban nature of the site.

APPENDIX B: TRANSPORTATION DESIGN CONCEPTS

The following pages include conceptual transportation designs for frontage improvements around the Aurora Square Community Renewal Area. These designs are subject to change as a result of additional agency and public review and more detailed area investigations.



CITY OF SHORELINE

TRANSPORTATION PLAN FOR THE AURORA SQUARE CRA
PRELIMINARY LAYOUT
NOVEMBER 21, 2014

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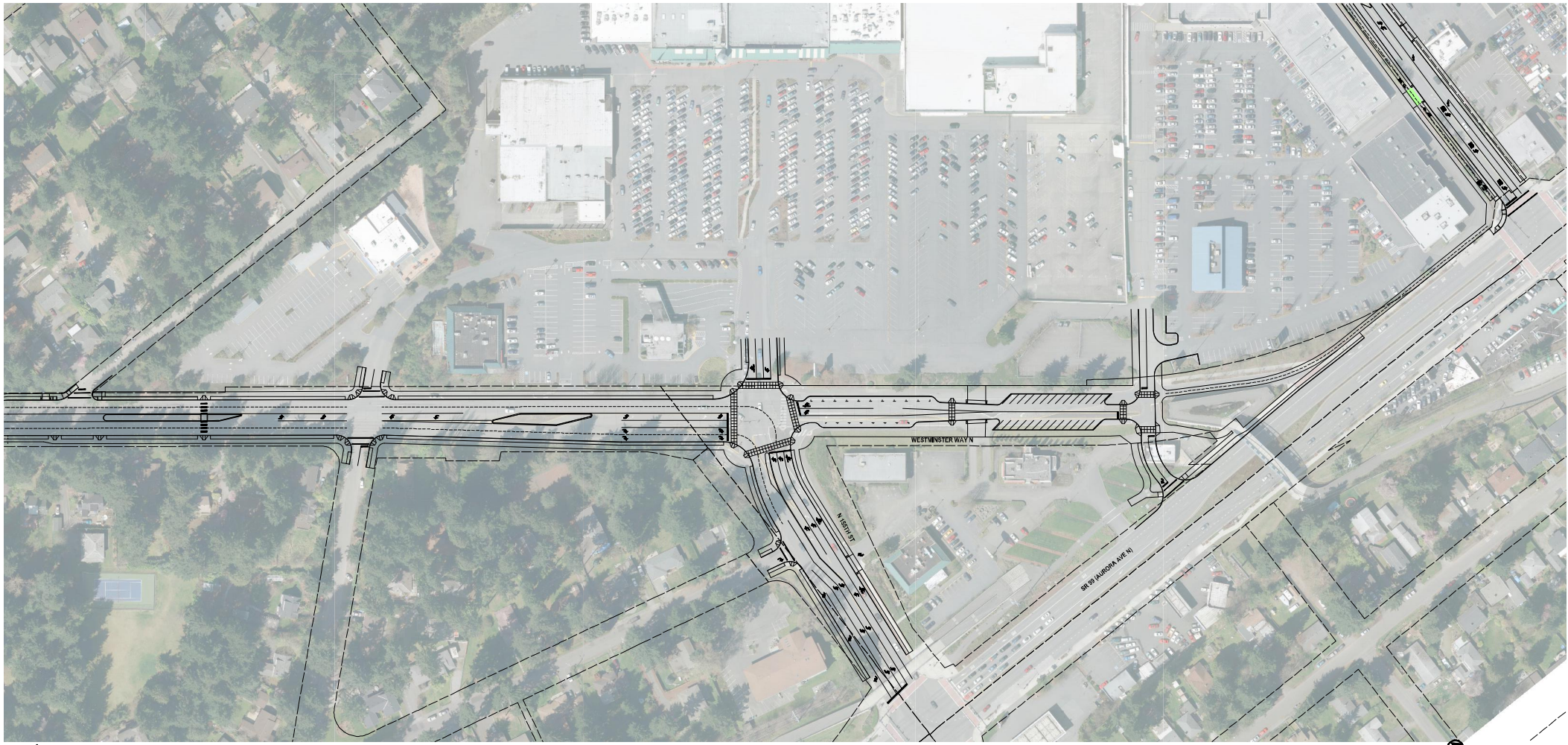
SCALE IN FEET

KPG



TRANSPORTATION PLAN FOR THE AURORA SQUARE CRA
PRELIMINARY LAYOUT
NOVEMBER 20, 2014

0 20 40 80 120
SCALE IN FEET

KPG

APPENDIX C: STORMWATER CONCEPT REPORT

AURORA SQUARE
COMMUNITY RENEWAL AREA

Stormwater Concept Development Study

Prepared for:

City of Shoreline
Department of Public Works
17500 Midvale Ave N
Shoreline, WA 98133

Prepared by:

753 9th Avenue N
Seattle, WA 98109
206-286-1640

October 2014

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FIGURES

TABLES

APPENDICES

1 Introduction

In 2012, the Shoreline City Council designated the 70+ acre Aurora Square area as a Community Renewal Area (CRA) where economic renewal would clearly deliver multifaceted public benefits. The associated CRA Plan, adopted in 2013, outlines a vision for the CRA. Implementing this vision will require redevelopment within the CRA, including removal of some existing buildings, constructing new buildings, and reconfiguring vehicle circulation and parking within the site. These activities will trigger stormwater requirements for flow control and water quality treatment, requirements that did not exist at the time of the original development of Aurora Square.

This report documents a preliminary study of concepts for stormwater facilities that will be required for redevelopment, to support a Planned Action Environmental Impact Statement (EIS).

The Planned Action EIS will analyze two Action Alternatives as well as a No Action alternative. The two Action Alternatives are summarized as follows:

- The **Phased Growth** alternative assumes a moderate level of development, which introduces 500 dwelling units and adds up to 250,000 square feet of retail and office space beyond present development space.

- The **Planned Growth** alternative assumes the maximum level of growth studied, adding 1000 dwelling units and 500,000 square feet of retail and office space beyond present development space.

2 Storm ater Re uirements for Redevelopment

Applicability of Stormwater Requirements

Per Shoreline Municipal Code (SMC) Chapter 13.10, the City has adopted the most recent version of the *Stormwater Management Manual for Western Washington,* published by the Washington State Department of Ecology (Stormwater Manual). The most recent version of the Stormwater Manual was published in August 2012.

Development within the Aurora Square CRA will be classified as “redevelopment” by the Stormwater Manual because the site is already substantially developed, i.e. with 35% or more existing hard surface coverage (Volume 1, Section 2.3 of the Stormwater Manual).

The Stormwater Manual describes nine Minimum Requirements for Development and Redevelopment. The applicability of the requirements for redevelopment is illustrated by the flowchart in Figure 2.4.2 in Volume 1 of the Stormwater Manual. An annotated version of this flowchart, as it is anticipated to apply to the Aurora Square redevelopment, is attached in Appendix A.

Assuming the value of the proposed site improvements exceeds 50% of the assessed value of the existing improvement, all nine minimum requirements would apply to both new and replaced hard surfaces.

Since "replaced hard surface" means the removal and replacement of hard surfaces down to the foundation (for buildings) or bare soils or base course for other hard surfaces, it does not appear that these requirements would apply to existing buildings or paved surfaces that remain unchanged.

Flow Control Requirements

Of the nine Minimum Requirements, the focus of this study is Minimum Requirement #7, Flow Control, because it is anticipated to have the largest impact on implementation of the CRA Plan, both in terms of cost and physical area required. Minimum Requirement #7 will require stormwater discharges from new and replaced hard surfaces to match developed discharge durations to pre-developed durations for the range of pre-developed discharge rates from 50% of the 2-year peak flow up to the full 50-year peak flow.

For the Aurora Square CRA, the pre-developed condition to be matched is a forested land cover. Although Minimum Requirement #7 allows for use of an existing condition land cover for certain highly-developed drainage basins, it does not appear that the Aurora Square development would qualify, because:

- According to the map in Appendix I-F of the Stormwater Manual, the lower sub-basins of Boeing Creek have not had 40% impervious coverage since 1985.
- The March 2013 *Boeing Creek Basin Plan* has identified instability in the stream channel.

LID and Runoff Treatment Requirements

Minimum Requirement #5 (On-Site Stormwater Management) and #6 (Runoff Treatment) will also impact redevelopment site planning and costs. However, by definition, on-site stormwater management requirements (LID techniques) need to be evaluated and implemented as part of the site layout and cannot be done off-site. Similarly, runoff treatment is often dealt with most cost-effectively on site, to treat only runoff from pollution-generating surfaces.

To comply with Minimum Requirement #5 (On-Site Stormwater Management), per Table 2.5.1 of the Stormwater Manual , redevelopment areas will be required to install LID BMPs meeting the LID Performance Standard, or BMPs from "List #2" for all new and replaced impervious surfaces. If the "List #2" option is chosen:

- New or replaced roof areas will be required to (1) implement downspout dispersion or infiltration if feasible, or (2) construct bioretention facilities with an area equal to 5% of the roof area.
- Other new or replaced hard surfaces are required to implement (1) permeable pavement if feasible, or (2) bioretention.

To comply with Minimum Requirement #6 (Runoff Treatment), redevelopment areas will be required to install runoff treatment systems for all pollution-generating impervious surfaces. Runoff treatment for pervious pavement it accomplished by the underlying soils, if certain conditions are met, or by an engineered treatment layer.

Assumptions Regarding Areas Subject to Stormwater Requirements

Since, as discussed above, stormwater requirements for redevelopment will apply to new and replaced hard surfaces, but not existing impervious surfaces that will remain, assumptions are needed regarding the range of new/replaced impervious surfaces that could result from redevelopment within the CRA.

For the purposes of evaluating stormwater requirements for the two alternative planned actions, the following assumptions have been made:

- Phased Growth: For this alternative, it is assumed that stormwater facilities will be required for 28 acres of redeveloped site area.

- Planned Growth: For this alternative, it is assumed that 44 acres of the site will be subject to stormwater requirements.

These 28-acre and 44-acre redevelopment areas are shown in Figures 1 and 2, using conceptual drawings for redevelopment as the basis. An impervious coverage of 80% has been assumed for this analysis. Although commercial zones in Shoreline are allowed to have between 85 and 95 percent hardscape coverage, it has been assumed that LID requirements will reduce the "non-infiltrating" hard surfaces subject to flow control to at least 80% of the redevelopment area. As discussed in the previous section, LID techniques required by Minimum Requirement #5 will most likely in the form of pervious pavements and dispersed bioretention facilities. Of the available LID alternatives, pervious pavement is the most likely to be feasible at Aurora Square given the site's underlying glacial till soils. Figure 3 illustrates where areas where pavement could be implemented under one redevelopment concept.

Alternative lo Control acility Concepts

Three concepts have been considered to comply with Minimum Requirement 7, Flow Control. Preliminary sizing calculations are attached in Appendix B.

3.1 Alternative Descriptions

Flow Control Concept #1 – On-site flow control facilities
This approach would construct flow control facilities on individual parcels as part of redevelopment projects as they occur. This is the "default" approach required through application of the Stormwater Manual requirements to individual development proposals. This concept, as sized for Planned Growth alternative, is shown on Figure 4.

For 44 acres of redevelopment within Aurora Square, preliminary calculations indicate 22 acre-feet of detention storage would be required to satisfy flow control requirements. These calculations assume on-site infiltration is not feasible due to glacial till soils. For this alternative, it has been assumed that detention storage would be constructed using several underground concrete vaults dispersed on individual development parcels within Aurora Square. The cost of this approach is anticipated to be approximately $516,000 per redeveloped acre, which equates to $14.4 million for the Phased Growth alternative and $22.7 million for Planned Growth.

An alternative on-site approach would be to construct a single flow control facility within the Aurora Square CRA to serve all redevelopment. However, with no apparent cost saving to offset considerable planning and coordination that would be required between property owners, this alternative has not been considered further at this time. Similarly, open pond facilities within the development could be considered to reduce the construction cost of flow control, but it has been assumed the significant reduction in developable site area would not be favored.

Flow Control Concept #2 – Boeing Creek Regional flow control facility in SCC Greenwood Parking Lot

This approach would construct a 11.8 acre-foot regional flow control facility within SCC's Greenwood Parking Lot with capacity to mitigate redevelopment Aurora Square per the CRA Plan (44 acres assumed) as well as SCC per their *Long Range Development Plan* (LRDP)(31.8 acres). The facility would be located adjacent to Boeing Creek and the City's M1 Dam regional detention facility, but would not alter the creek or the reservoir upstream from the M1 Dam. A flow splitter would be installed on the existing 48" pipe to direct a portion of the flows equivalent to runoff generated by Aurora Square to the regional facility. Figure 5 shows the location of this facility and upstream tributary areas. A conceptual layout of the facility has been included in Appendix C.

This alternative would increase the size of SCC's planned flow control facility by increasing the proposed depth, replacing presettling cells with hydrodynamic separators, and by grading closer to Boeing Creek. Initial sizing assumes a long-term infiltration rate of 2 inches per hour, the same as was used by SCC in their *Campus Master Drainage Plan*. Loss of parking is a concern to SCC. Their planned facility would have been constructed incrementally as needed over a 30-year period, whereas a regional facility constructed by the City would have a more immediate impact.

Flow Control Concept #3 – Boeing Creek Regional flow control by expanding existing M1 Dam reservoir

This approach would expand the existing M1 Dam regional flow control facility by 21 acre feet, with capacity to mitigate redevelopment of Aurora Square per the CRA Plan (44 acres assumed), SCC redevelopment (31.8 acres), and 55 acres of additional redevelopment in the upstream basin, which includes a portion of the Town Center as well as potential redevelopment areas along Aurora Avenue with Mixed Business and Neighborhood Business zoning. As with the existing M1 Dam facility, the expanded facility would be in-stream, requiring excavation and modification of Boeing Creek extending approximately 900 feet upstream from the dam. Figure

5 shows the location of this facility and upstream tributary areas. A conceptual layout of the facility has been included in Appendix C that includes two additional berms to reduce the depth of the excavation and maximize the pond bottom area available for infiltration.

As with Alternative 2, initial sizing assumes a long-term infiltration rate of 2 inches per hour, and will require addressing parking impacts at SCC.

3.2 Alternative Analysis

The three alternative flow control concepts described in Section 3.2 have been evaluated based on cost and qualitative advantages and disadvantages, as documented below in Table 1. The planning-level costs listed in the table are very preliminary, and should be used only for comparison between alternatives (see Appendix C for cost estimate backup). Costs are based on facility sizing for the Planned Growth planned action alternative.

Table 1 – Alternative Analysis Summary

Alt.	Description	Planning-Level Cost	Flow Control Area	Advantages	Disadvantages
1	On-site flow control facilities (22 ac-ft, no infiltration)	$22.7 million ($516,000 per redeveloped acre)	44 ac (Aurora Square Only)	• No City cost or risk • Sized exactly for what is needed	• Nearly 4X greater size and 10X higher cost as compared to regional facility concept with infiltration • Restricts site layout
2	Regional flow control at SCC Greenwood Parking Lot (11.8 ac-ft with infiltration)	$4.3 million ($57,000 per redeveloped acre)	76 ac (Aurora Square and SCC)	• Significantly lower cost compared to on-site facilities	• Initial cost to City • Impacts SCC parking
3	Regional flow control at SCC by expanding the existing M1 Dam facility. (20.7 ac-ft added, with infiltration)	$6.2 million ($47,000 per redeveloped acre)	131 ac (Aurora Square, SCC, and 55 add'l acres in basin)	• Significantly lower cost compared to on-site facilities • Capacity for Town Center and other Aurora Avenue redevelopment	• Initial cost to City • Impacts SCC parking • Stream impacts may not be allowed

Preliminary Conclusions

Based on this analysis, it appears that Alternative Concepts #2 and #3, regional stormwater facilities constructed at SCC's Greenwood parking lot, could provide flow control for Aurora Square and potentially other redevelopment areas at a significantly lower cost than using on-site detention facilities. This cost-effectiveness is due to (1) soils at SCC that have capacity to infiltrate stormwater and (2) the ability to construct an open pond rather than an underground vault.

Additional analysis will be needed to determine the feasibility and cost of a regional flow control facility. Following is a list of some of the issue that will need to be addressed, either as part of a feasibility analysis or during preliminary design:

Agreement with Shoreline Community College

Agreements with SCC will need to be worked out regarding use of college property for a regional facility as well as addressing impacts to the college from the loss of parking.

Evaluation of Critical Areas impacts and Permitting Feasibility

A *Critical Areas Reconnaissance Report* was prepared by Touchstone EcoServices in January 2011 as part of SCC's *Long Range Development Plan*. This report identified two Class III wetlands located immediately upstream from the M1 Dam. The reach of Boeing Creek upstream from the M1 Dam was identified as being riprap lined and having intermittent flows, and meeting the definition for Type III streams per SMC 20.80.470. The report also noted that although the Washington State Department of Fish and Wildlife has identified this reach as priority habitat, existing stream conditions and flashy hydrology cannot support resident fish and downstream fish passage blockages prevent any upstream fish passage to this stream reach. The report also identified erosion and landslide hazard areas in the vicinity of Boeing Creek based on existing slopes steeper than 15%.

A critical areas study specific to the regional facility concepts, especially Alternative 3 which would excavate Boeing Creek, is needed to determine the if this concept is permittable.

Subsurface Investigation and Geotechnical Analysis

The *Preliminary Geotechnical Services* report prepared in October 2009 by GeoEngineers for SCC's *Long Range Development Plan* included two test pits dug to a depth of 8 to 10 feet in the Greenwood parking lot, which revealed advance outwash sand deposits suitable for infiltration at depths of 6 to 10 feet. The report recommended a infiltration rate of 2 inches per hour for preliminary design of infiltration in these soils.

Since the sizing of a regional flow control facility is very sensitive to the long-term infiltration rate used for design, additional geotechnical analysis will be needed that includes borings extending below the proposed facility bottom, which could, based on preliminary layouts, extend up to 35 feet below existing grades. This is needed to verify that suitable conditions for

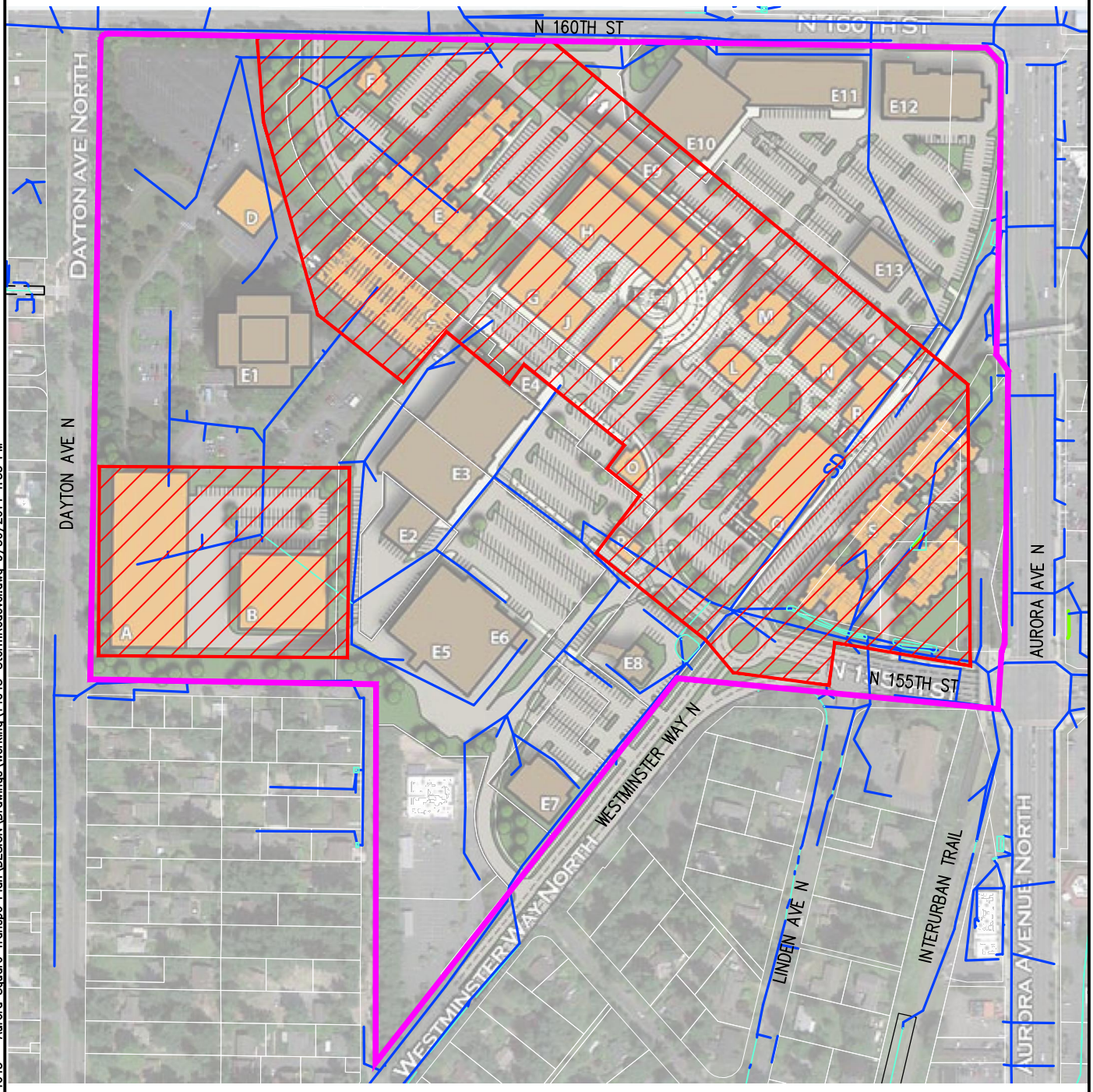
infiltration exist at the bottom of the proposed facility, including meeting requirements for separation from the groundwater table. As the design develops, all requirements for subsurface and infiltration receptor characterization will need to be met as described in Section 3.3 of the Stormwater Manual.

Topographic Survey

LIDAR data supplemented with limited field survey may be suitable for the feasibility analysis. Field topographic survey and basemapping will need to be performed as part of Preliminary Design.

Hydrologic and Hydraulic Modeling

Hydrologic and hydraulic modeling performed for this study was limited to use of the Western Washington Hydrology Model (WWHM) for conceptual facility sizing. Additional modeling will be needed to demonstrate that a regional facility would achieve a flow duration curve at the facility outlet that is equivalent to the flow regime that would result from on-site flow control in the upper basin. Following additional modeling, it is recommended that the City coordinate with Ecology to obtain their concurrence that the regional facility will satisfy Minimum Requirement 7 without modification. If implementation of the regional facility were to require modifying the standards of Minimum Requirement #7, additional basin planning that justifies the modification would need to be reviewed and approved by Ecology, as described in Section 7, Appendix 1 of the NPDES *Phase II Western Washington Municipal Stormwater Permit*.



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LEGEND

- AURORA SQUARE COMMUNITY RENEWAL AREA
- EXISTING STORM DRAIN
- ASSUMED REDEVELOPMENT AREA FOR STORMWATER ANALYSIS (28 ACRES)

N

0 50 150 300 450

FIGURE 1

REDEVLOPMENT AREA - PHASED GROWTH ALT.

AURORA SQUARE CRA STORMWATER CONCEPT DEVELOPMENT STUDY

CITY OF SHORELINE

KPG
753 9th Ave N
Seattle, WA 98109
(206) 286-1640
www.kpg.com
2502 Jefferson Ave
Tacoma, WA 98402
(253) 627-0720

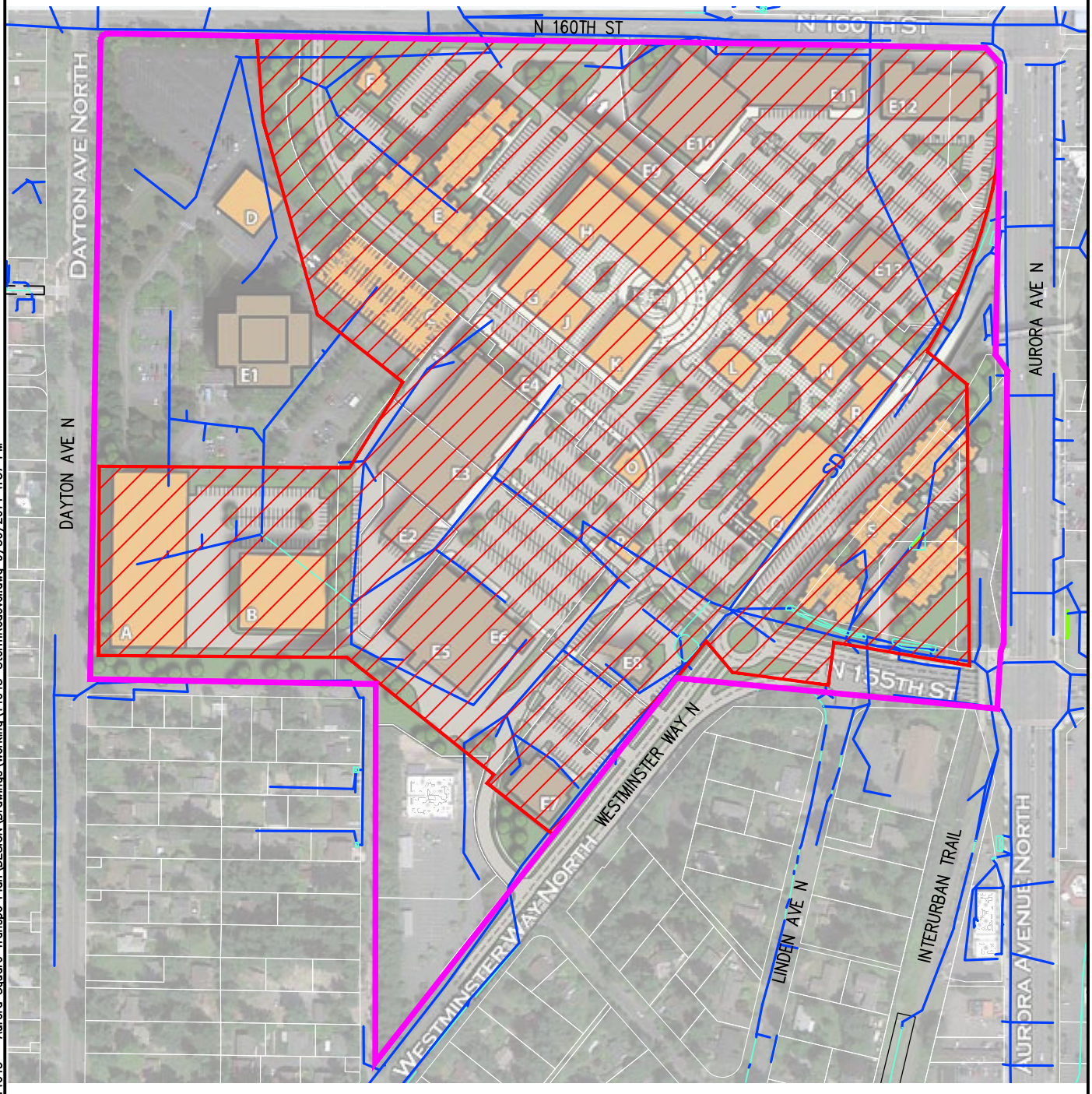

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FIGURE 2

REDEVLOPMENT AREA - PLANNED GROWTH ALT.

AURORA SQUARE CRA STORMWATER CONCEPT DEVELOPMENT STUDY

CITY OF SHORELINE

KPG
753 9th Ave N
Seattle, WA 98109
(206) 286-1640
www.kpg.com

2502 Jefferson Ave
Tacoma, WA 98402
(253) 627-0720

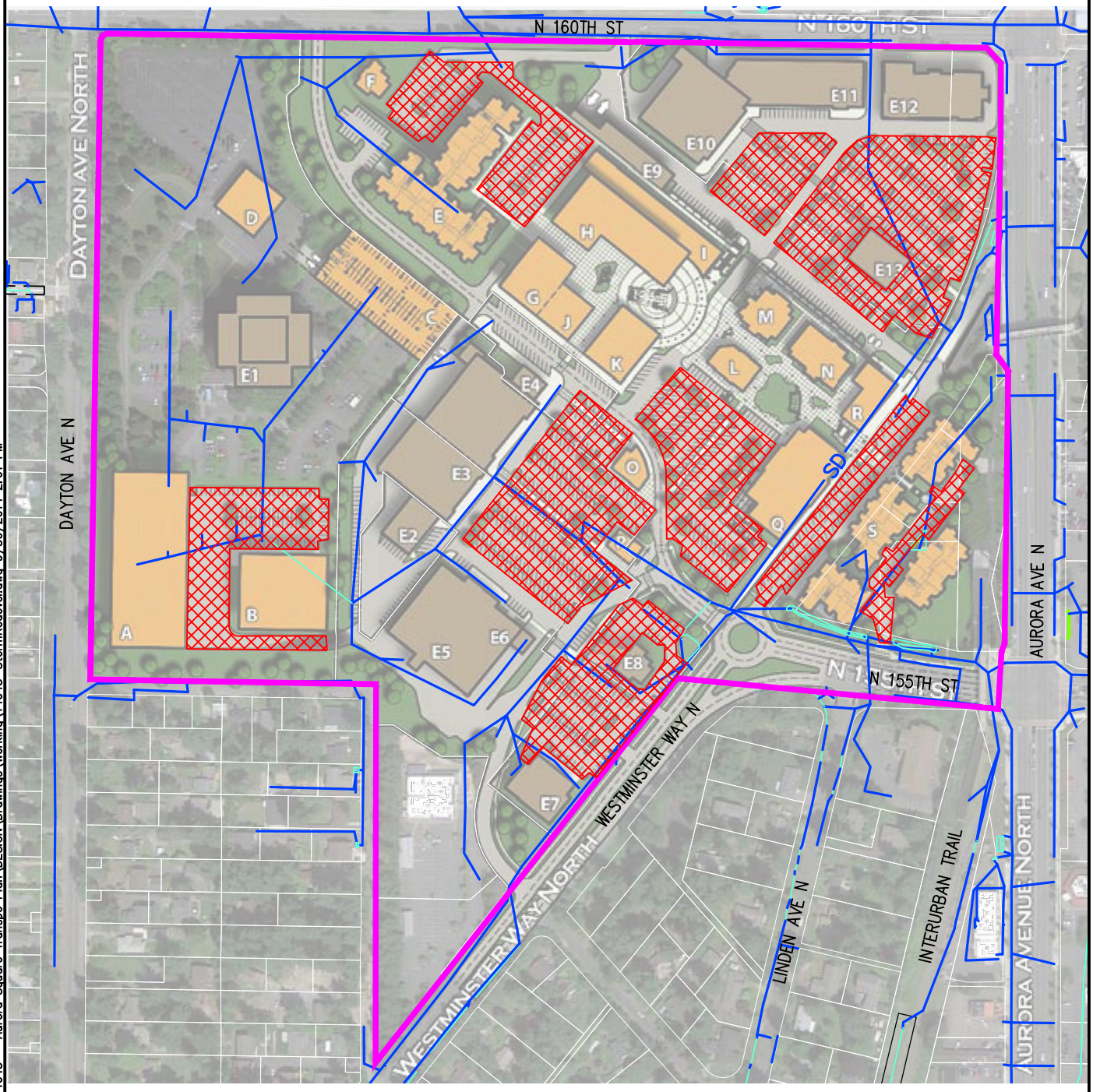

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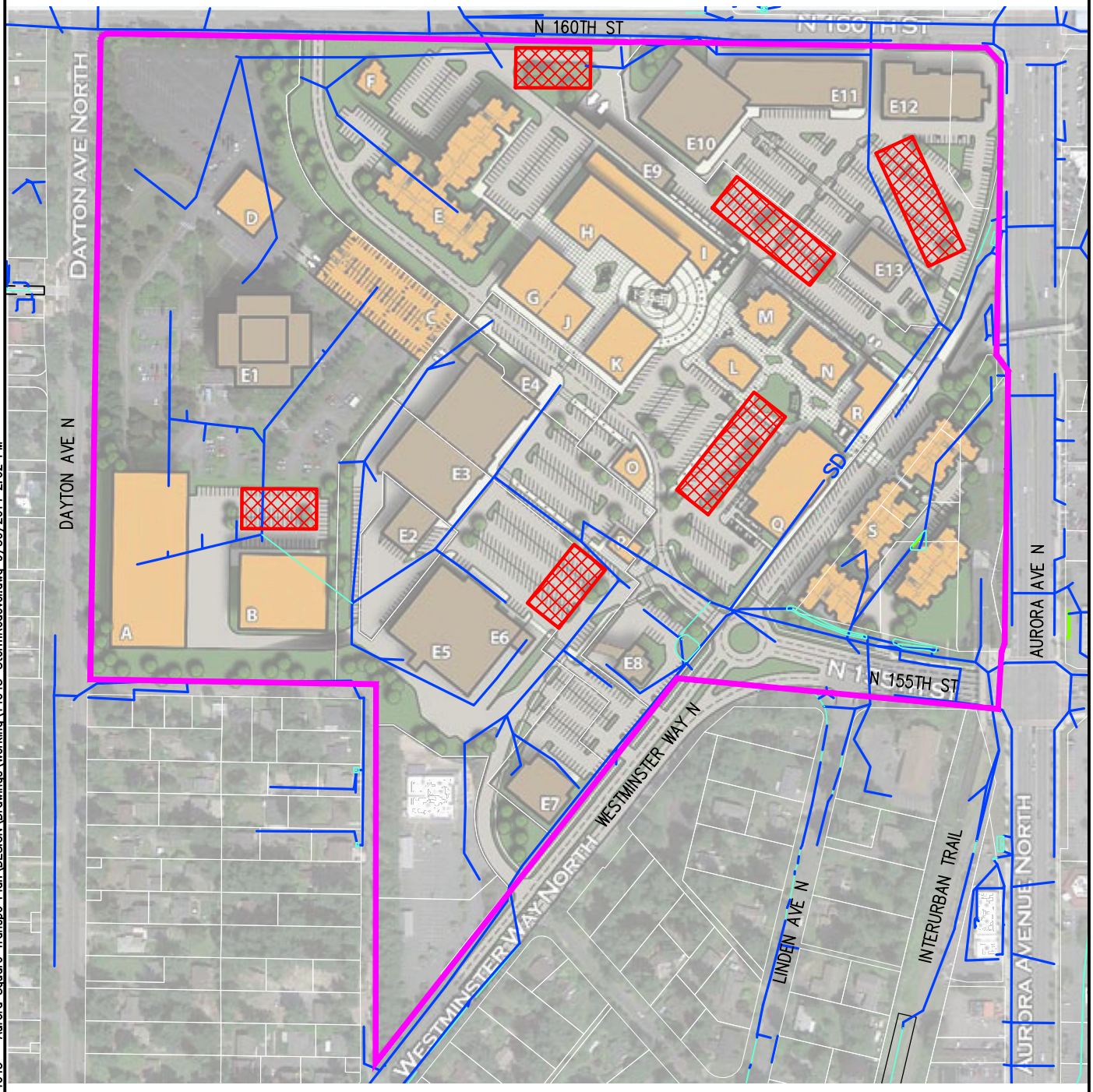
FIGURE 3

POTENTIAL PERVIOUS PAVEMENT AREAS

AURORA SQUARE CRA STORMWATER CONCEPT DEVELOPMENT STUDY

CITY OF SHORELINE

KPG
753 9th Ave N
Seattle, WA 98109
(206) 286-1640
www.kpg.com
2502 Jefferson Ave
Tacoma, WA 98402
(253) 627-0720



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LEGEND

- AURORA SQUARE COMMUNITY RENEWAL AREA
- EXISTING STORM DRAIN
- POTENTIAL FLOW CONTROL VAULT LOCATIONS FOR PLANNED GROWTH ALTERNATIVE (ASSUMING 100% REPLACED IMPERVIOUS SURFACES)

N

0 50 150 300 450

FIGURE 4

CITY OF SHORELINE

ON-SITE FLOW CONTROL CONCEPT

AURORA SQUARE CRA STORMWATER CONCEPT DEVELOPMENT STUDY

KPG
753 9th Ave N
Seattle, WA 98109
(206) 286-1640
www.kpg.com
2502 Jefferson Ave
Tacoma, WA 98402
(253) 627-0720

TOWN CENTER POTENTIAL REDEVELOPMENT AREA APPROX. 43 ACRES

OTHER AURORA AVENUE POTENTIAL REDEVELOPMENT APPROX. 53 ACRES

CITY HALL

SHOREWOOD HIGH SCHOOL

AURORA SQUARE 44 AC

TOTAL TRIBUTARY AREA TO REGIONAL POND 685 AC

CONCEPTUAL REGIONAL FLOW CONTROL POND APPROX. MITIGATION CAPACITY:
ALT 1 - 76 AC
ALT 2 - 130 AC

SHORELINE COMMUNITY COLLEGE 31.8 AC

M1 DAM

AURORA AVE N

INTERURBAN TRAIL

WESTMINSTER WAY N

DAYTON AVE N

GREENWOOD AVE N

N 175TH ST

N 165TH ST

N 160TH ST

N 145TH ST

FREMONT PL N

HALL RD

CARLYLE

BOEING CREEK

48"

36"

24"

LEGEND

- AURORA SQUARE COMMUNITY RENEWAL AREA
- BOEING CREEK
- MAIN STORM DRAIN/CULVERT
- OTHER STORM DRAINS
- AURORA SQUARE AND SHORELINE COMMUNITY COLLEGE REDEVELOPMENT AREAS
- TOWN CENTER POTENTIAL REDEVELOPMENT AREAS TRIBUTARY TO REGIONAL FLOW CONTROL
- OTHER AURORA AVENUE POTENTIAL REDEVELOPMENT AREAS

0 200 400 800 1200

FIGURE 5

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CITY OF SHORELINE

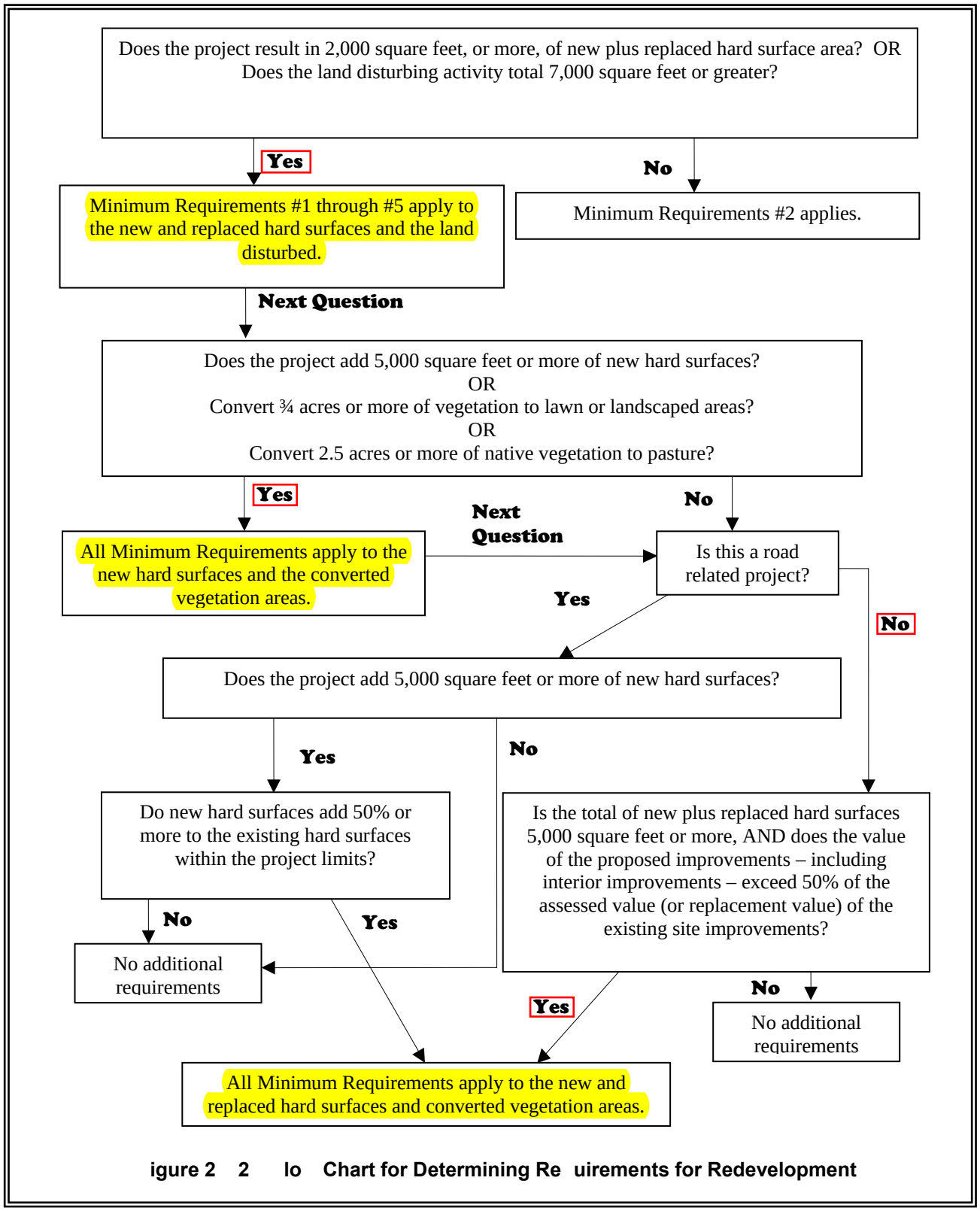
REGINAL FLOW CONTROL CONCEPT AND TRIBUTARY AREAS

AURORA SQUARE CRA STORMWATER CONCEPT DEVELOPMENT STUDY

KPG
753 9th Ave N
Seattle, WA 98109
(206) 286-1640
www.kpg.com

2502 Jefferson Ave
Tacoma, WA 98402
(253) 627-0720

APPENDIX A – Standards Applicability Flowchart



igure 2 2 lo Chart for Determining Re uirements for Redevelopment

APPENDIX B – Preliminary Flow Control Sizing Calculations

Flow Control Sizing Calcs – Alt. 1 (On-Site) – Planned Growth

44 ac Aurora Square tributary area with 80% impervious coverage

WWHM4
PROJECT REPORT

Project Name: Aurora-Sq-44ac
Site Name: Aurora Square
Site Address:
City :
Report Date: 9/30/2014
Gage : Seatac
Data Start : 1948/10/01
Data End : 1998/09/30
Precip Scale: 0.83
Version : 2014/02/14

Low Flow Threshold for POC 1 : 50 Percent of the 2 Year

High Flow Threshold for POC 1: 50 year

PREDEVELOPED LAND USE

Name : Basin 1
Bypass: No

GroundWater: No

Pervious Land Use	Acres
C, Forest, Mod	44
Pervious Total	44

Impervious Land Use	Acres
Impervious Total	0
Basin Total	44

Element Flows To:

Surface	Interflow	Groundwater

MITIGATED LAND USE

Name : Basin 1
Bypass: No

GroundWater: No

Pervious Land Use	Acres
C, Lawn, Flat	8.8
Pervious Total	8.8

Impervious Land Use	Acres
PARKING FLAT	35.2
Impervious Total	35.2
Basin Total	44

Element Flows To:

Surface	Interflow	Groundwater
Vault 1	Vault 1	

Name : Vault 1
Width : 137.708921570869 ft.
Length : 688.544607854334 ft.
Depth: 11 ft.
Discharge Structure
Riser Height: 10 ft.
Riser Diameter: 18 in.
Orifice 1 Diameter: 2.25 in. **Elevation:** 0 ft.
Orifice 2 Diameter: 4.1 in. **Elevation:** 6.67 ft.
Orifice 3 Diameter: 2.5 in. **Elevation:** 7.5 ft.

Element Flows To:

Outlet 1	Outlet 2

Vault Hydraulic Table

Stage(ft)	Area(ac)	Volume(ac-ft)	Discharge(cfs)	Infilt(cfs)
0.0000	2.176	0.000	0.000	0.000
0.1222	2.176	0.266	0.046	0.000
0.2444	2.176	0.532	0.065	0.000
0.3667	2.176	0.798	0.080	0.000
0.4889	2.176	1.064	0.093	0.000
0.6111	2.176	1.330	0.103	0.000
0.7333	2.176	1.596	0.113	0.000
0.8556	2.176	1.862	0.123	0.000
0.9778	2.176	2.128	0.131	0.000
1.1000	2.176	2.394	0.139	0.000
1.2222	2.176	2.660	0.147	0.000
1.3444	2.176	2.926	0.154	0.000
1.4667	2.176	3.192	0.161	0.000
1.5889	2.176	3.458	0.167	0.000
1.7111	2.176	3.724	0.173	0.000
1.8333	2.176	3.990	0.180	0.000
1.9556	2.176	4.256	0.185	0.000
2.0778	2.176	4.522	0.191	0.000
2.2000	2.176	4.788	0.197	0.000
2.3222	2.176	5.054	0.202	0.000
2.4444	2.176	5.320	0.207	0.000
2.5667	2.176	5.587	0.213	0.000
2.6889	2.176	5.853	0.218	0.000
2.8111	2.176	6.119	0.222	0.000
2.9333	2.176	6.385	0.227	0.000
3.0556	2.176	6.651	0.232	0.000
3.1778	2.176	6.917	0.237	0.000
3.3000	2.176	7.183	0.241	0.000
3.4222	2.176	7.449	0.246	0.000
3.5444	2.176	7.715	0.250	0.000
3.6667	2.176	7.981	0.254	0.000
3.7889	2.176	8.247	0.258	0.000
3.9111	2.176	8.513	0.263	0.000
4.0333	2.176	8.779	0.267	0.000
4.1556	2.176	9.045	0.271	0.000
4.2778	2.176	9.311	0.275	0.000
4.4000	2.176	9.577	0.278	0.000
4.5222	2.176	9.843	0.282	0.000
4.6444	2.176	10.11	0.286	0.000
4.7667	2.176	10.37	0.290	0.000
4.8889	2.176	10.64	0.294	0.000

5.0111	2.176	10.90	0.297	0.000
5.1333	2.176	11.17	0.301	0.000
5.2556	2.176	11.44	0.304	0.000
5.3778	2.176	11.70	0.308	0.000
5.5000	2.176	11.97	0.311	0.000
5.6222	2.176	12.23	0.315	0.000
5.7444	2.176	12.50	0.318	0.000
5.8667	2.176	12.77	0.322	0.000
5.9889	2.176	13.03	0.325	0.000
6.1111	2.176	13.30	0.328	0.000
6.2333	2.176	13.56	0.332	0.000
6.3556	2.176	13.83	0.335	0.000
6.4778	2.176	14.10	0.338	0.000
6.6000	2.176	14.36	0.341	0.000
6.7222	2.176	14.63	0.445	0.000
6.8444	2.176	14.89	0.532	0.000
6.9667	2.176	15.16	0.591	0.000
7.0889	2.176	15.43	0.639	0.000
7.2111	2.176	15.69	0.681	0.000
7.3333	2.176	15.96	0.719	0.000
7.4556	2.176	16.22	0.754	0.000
7.5778	2.176	16.49	0.832	0.000
7.7000	2.176	16.76	0.890	0.000
7.8222	2.176	17.02	0.939	0.000
7.9444	2.176	17.29	0.982	0.000
8.0667	2.176	17.55	1.023	0.000
8.1889	2.176	17.82	1.060	0.000
8.3111	2.176	18.09	1.096	0.000
8.4333	2.176	18.35	1.131	0.000
8.5556	2.176	18.62	1.163	0.000
8.6778	2.176	18.88	1.195	0.000
8.8000	2.176	19.15	1.225	0.000
8.9222	2.176	19.42	1.255	0.000
9.0444	2.176	19.68	1.284	0.000
9.1667	2.176	19.95	1.312	0.000
9.2889	2.176	20.21	1.339	0.000
9.4111	2.176	20.48	1.365	0.000
9.5333	2.176	20.75	1.391	0.000
9.6556	2.176	21.01	1.417	0.000
9.7778	2.176	21.28	1.441	0.000
9.9000	2.176	21.55	1.466	0.000
10.022	2.176	21.81	1.538	0.000
10.144	2.176	22.08	2.315	0.000
10.267	2.176	22.34	3.548	0.000
10.389	2.176	22.61	5.101	0.000
10.511	2.176	22.88	6.919	0.000
10.633	2.176	23.14	8.966	0.000
10.756	2.176	23.41	11.21	0.000
10.878	2.176	23.67	13.66	0.000
11.000	2.176	23.94	16.27	0.000
11.122	2.176	24.21	19.05	0.000
11.244	0.000	0.000	21.98	0.000

ANALYSIS RESULTS

Predeveloped Landuse Totals for POC #1
Total Pervious Area:44
Total Impervious Area:0

Mitigated Landuse Totals for POC #1
Total Pervious Area:8.8
Total Impervious Area:35.2

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	Flow(cfs)
2 year	0.682475
5 year	1.261437
10 year	1.614162
25 year	1.996952
50 year	2.234943
100 year	2.436155

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	Flow(cfs)
2 year	0.400633
5 year	0.654066
10 year	0.87275
25 year	1.217444
50 year	1.531049
100 year	1.899865

Annual Peaks for Predeveloped and Mitigated. POC #1

Year	Predeveloped	Mitigated
1949	0.884	0.276
1950	1.572	0.715
1951	2.072	1.460
1952	0.549	0.250
1953	0.394	0.675
1954	0.678	0.336
1955	1.195	0.286
1956	0.986	1.079
1957	0.474	0.298
1958	0.777	0.324
1959	0.677	0.340
1960	1.036	0.713
1961	0.711	0.741
1962	0.319	0.257
1963	0.418	0.325
1964	0.669	0.654
1965	0.401	0.340
1966	0.488	0.330
1967	1.178	0.751
1968	0.686	0.300
1969	0.614	0.323
1970	0.400	0.331
1971	0.492	0.305
1972	1.504	1.214
1973	0.586	0.538
1974	0.625	0.481
1975	0.801	0.309
1976	0.562	0.315
1977	0.008	0.223
1978	0.468	0.328
1979	0.234	0.215
1980	0.646	1.037
1981	0.387	0.314
1982	0.496	0.336
1983	0.768	0.336
1984	0.476	0.287
1985	0.226	0.253
1986	1.511	0.304
1987	1.114	0.618
1988	0.293	0.281
1989	0.265	0.285
1990	2.037	0.548
1991	1.826	1.098
1992	0.465	0.308
1993	0.568	0.228
1994	0.079	0.226
1995	0.949	0.597
1996	1.911	1.375
1997	1.621	1.193
1998	0.304	0.292

Ranked Annual Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	2.0717	1.4599
2	2.0366	1.3745
3	1.9106	1.2137
4	1.8262	1.1932
5	1.6213	1.0976
6	1.5721	1.0786
7	1.5114	1.0370
8	1.5040	0.7506
9	1.1951	0.7408
10	1.1782	0.7146
11	1.1140	0.7127
12	1.0358	0.6751
13	0.9864	0.6544
14	0.9491	0.6184
15	0.8842	0.5966
16	0.8010	0.5476
17	0.7773	0.5376
18	0.7677	0.4806
19	0.7112	0.3403
20	0.6863	0.3396
21	0.6778	0.3362
22	0.6769	0.3362
23	0.6691	0.3362
24	0.6463	0.3313
25	0.6249	0.3297
26	0.6135	0.3282
27	0.5858	0.3246
28	0.5683	0.3243
29	0.5619	0.3226
30	0.5492	0.3148
31	0.4959	0.3142
32	0.4923	0.3094
33	0.4884	0.3076
34	0.4759	0.3046
35	0.4744	0.3042
36	0.4684	0.3000
37	0.4653	0.2981
38	0.4183	0.2920
39	0.4007	0.2868
40	0.3996	0.2856
41	0.3935	0.2855
42	0.3868	0.2809
43	0.3191	0.2763
44	0.3036	0.2571
45	0.2932	0.2533
46	0.2649	0.2504
47	0.2345	0.2276
48	0.2265	0.2257
49	0.0794	0.2227
50	0.0084	0.2149

POC #1
The Facility PASSED

The Facility PASSED.

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.3412	3945	3132	79	Pass
0.3604	3536	2860	80	Pass
0.3795	3201	2722	85	Pass
0.3986	2910	2574	88	Pass
0.4178	2650	2437	91	Pass
0.4369	2432	2303	94	Pass
0.4560	2233	2142	95	Pass
0.4751	2065	2004	97	Pass
0.4943	1895	1872	98	Pass
0.5134	1766	1745	98	Pass

0.5325	1646	1640	99	Pass
0.5516	1536	1507	98	Pass
0.5708	1440	1387	96	Pass
0.5899	1350	1285	95	Pass
0.6090	1253	1152	91	Pass
0.6282	1166	1041	89	Pass
0.6473	1084	960	88	Pass
0.6664	1009	864	85	Pass
0.6855	951	792	83	Pass
0.7047	898	722	80	Pass
0.7238	846	658	77	Pass
0.7429	798	599	75	Pass
0.7621	750	555	74	Pass
0.7812	712	538	75	Pass
0.8003	667	523	78	Pass
0.8194	644	507	78	Pass
0.8386	614	481	78	Pass
0.8577	579	462	79	Pass
0.8768	546	435	79	Pass
0.8960	520	408	78	Pass
0.9151	499	384	76	Pass
0.9342	470	361	76	Pass
0.9533	437	335	76	Pass
0.9725	415	306	73	Pass
0.9916	390	280	71	Pass
1.0107	367	260	70	Pass
1.0299	342	238	69	Pass
1.0490	320	208	65	Pass
1.0681	304	192	63	Pass
1.0872	282	174	61	Pass
1.1064	266	156	58	Pass
1.1255	251	147	58	Pass
1.1446	239	133	55	Pass
1.1638	230	117	50	Pass
1.1829	219	105	47	Pass
1.2020	202	92	45	Pass
1.2211	194	83	42	Pass
1.2403	187	77	41	Pass
1.2594	181	72	39	Pass
1.2785	173	65	37	Pass
1.2977	163	57	34	Pass
1.3168	155	51	32	Pass
1.3359	148	45	30	Pass
1.3550	140	38	27	Pass
1.3742	133	25	18	Pass
1.3933	128	18	14	Pass
1.4124	122	11	9	Pass
1.4316	115	8	6	Pass
1.4507	108	5	4	Pass
1.4698	100	0	0	Pass
1.4889	91	0	0	Pass
1.5081	84	0	0	Pass
1.5272	77	0	0	Pass
1.5463	66	0	0	Pass
1.5655	61	0	0	Pass
1.5846	54	0	0	Pass
1.6037	52	0	0	Pass
1.6228	47	0	0	Pass
1.6420	44	0	0	Pass
1.6611	41	0	0	Pass
1.6802	37	0	0	Pass
1.6993	34	0	0	Pass
1.7185	28	0	0	Pass
1.7376	26	0	0	Pass
1.7567	22	0	0	Pass
1.7759	21	0	0	Pass
1.7950	19	0	0	Pass
1.8141	17	0	0	Pass
1.8332	15	0	0	Pass
1.8524	15	0	0	Pass
1.8715	13	0	0	Pass

1.8906	11	0	0	Pass
1.9098	11	0	0	Pass
1.9289	8	0	0	Pass
1.9480	8	0	0	Pass
1.9671	6	0	0	Pass
1.9863	5	0	0	Pass
2.0054	4	0	0	Pass
2.0245	3	0	0	Pass
2.0437	2	0	0	Pass
2.0628	2	0	0	Pass
2.0819	0	0	0	Pass
2.1010	0	0	0	Pass
2.1202	0	0	0	Pass
2.1393	0	0	0	Pass
2.1584	0	0	0	Pass
2.1776	0	0	0	Pass
2.1967	0	0	0	Pass
2.2158	0	0	0	Pass
2.2349	0	0	0	Pass

Water Quality BMP Flow and Volume for POC #1
On-line facility volume: 0 **acre-feet**
On-line facility target flow: 0 **cfs.**
Adjusted for 15 min: 0 **cfs.**
Off-line facility target flow: 0 **cfs.**
Adjusted for 15 min: 0 **cfs.**

Perlnd and Implnd Changes
No changes have been made.

Flow Control Sizing Calcs – Alt. 2 (Regional, SCC Greenwood Parking Lot, adjacent to Boeing Creek)

- **44 ac Aurora Square tributary area with 80% impervious coverage**
- **31.8 ac Shoreline Community College tributary area per Campus Master Drainage Plan**
- **2 in/hour infiltration per SCC preliminary geotechnical study**
- **Resulting facility size 11.5 ac-ft**

WWHM4
PROJECT REPORT

Project Name: SCC-2
Site Name: Aurora Sq - SCC
Site Address:
City :
Report Date: 9/30/2014
Gage : Seatac
Data Start : 1948/10/01
Data End : 1998/09/30
Precip Scale: 0.83
Version : 2014/02/14

Low Flow Threshold for POC 1 : 50 Percent of the 2 Year

High Flow Threshold for POC 1: 50 year

PREDEVELOPED LAND USE

Name : SCC-LRDP
Bypass: No

GroundWater: No

Pervious Land Use	Acres
C, Forest, Flat	31.8
Pervious Total	31.8

Impervious Land Use	Acres
Impervious Total	0
Basin Total	31.8

Element Flows To:
Surface **Interflow** **Groundwater**

Name : AuroraSq
Bypass: No

GroundWater: No

Pervious Land Use	Acres
C, Forest, Flat	44
Pervious Total	44

Impervious Land Use	Acres

Impervious Total 0

Basin Total 44

Element Flows To:

Surface	Interflow	Groundwater

MITIGATED LAND USE

Name : SCC-LRDP
Bypass: No

GroundWater: No

Pervious Land Use	Acres
C, Lawn, Flat	6.6
Pervious Total	6.6

Impervious Land Use	Acres
PARKING FLAT	25.2
Impervious Total	25.2
Basin Total	31.8

Element Flows To:

Surface	Interflow	Groundwater
Trapezoidal Pond 1	Trapezoidal Pond 1	

Name : AuroraSq
Bypass: No

GroundWater: No

Pervious Land Use	Acres
C, Lawn, Flat	8.8
Pervious Total	8.8

Impervious Land Use	Acres
PARKING FLAT	35.2
Impervious Total	35.2
Basin Total	44

Element Flows To:

Surface	Interflow	Groundwater
Trapezoidal Pond 1	Trapezoidal Pond 1	

Name : Trapezoidal Pond 1
Bottom Length: 830.47 ft.
Bottom Width: 46.14 ft.
Depth: 10 ft.

Volume at riser head: 11.4478 acre-ft.
Infiltration On
Infiltration rate: 2
Infiltration safety factor: 1
Total Volume Infiltrated (ac-ft): 6862.318
Total Volume Through Riser (ac-ft): 83.758
Total Volume Through Facility (ac-ft): 6946.076
Percent Infiltrated: 98.79
Side slope 1: 2 To 1
Side slope 2: 2 To 1
Side slope 3: 2 To 1
Side slope 4: 2 To 1
Discharge Structure
Riser Height: 9 ft.
Riser Diameter: 54 in.
Notch Type: Rectangular
Notch Width: 0.073 ft.
Notch Height: 4.720 ft.
Orifice 1 Diameter: 3.658 in. **Elevation:** 0 ft.

Element Flows To:
Outlet 1 **Outlet 2**

Pond Hydraulic Table

Stage(ft)	Area(ac)	Volume(ac-ft)	Discharge(cfs)	Infilt(cfs)
0.0000	0.879	0.000	0.000	0.000
0.1111	0.888	0.098	0.117	1.773
0.2222	0.897	0.197	0.165	1.773
0.3333	0.906	0.297	0.202	1.773
0.4444	0.915	0.398	0.234	1.773
0.5556	0.924	0.501	0.261	1.773
0.6667	0.933	0.604	0.286	1.773
0.7778	0.942	0.708	0.309	1.773
0.8889	0.951	0.813	0.331	1.773
1.0000	0.960	0.920	0.351	1.773
1.1111	0.969	1.027	0.370	1.773
1.2222	0.978	1.135	0.388	1.773
1.3333	0.987	1.244	0.405	1.773
1.4444	0.996	1.354	0.422	1.773
1.5556	1.005	1.466	0.438	1.773
1.6667	1.014	1.578	0.453	1.773
1.7778	1.023	1.691	0.468	1.773
1.8889	1.033	1.805	0.483	1.773
2.0000	1.042	1.921	0.497	1.773
2.1111	1.051	2.037	0.510	1.773
2.2222	1.060	2.154	0.523	1.773
2.3333	1.069	2.273	0.536	1.773
2.4444	1.078	2.392	0.549	1.773
2.5556	1.087	2.512	0.561	1.773
2.6667	1.096	2.634	0.573	1.773
2.7778	1.106	2.756	0.585	1.773
2.8889	1.115	2.879	0.597	1.773
3.0000	1.124	3.004	0.608	1.773
3.1111	1.133	3.129	0.619	1.773
3.2222	1.142	3.256	0.630	1.773
3.3333	1.152	3.383	0.641	1.773
3.4444	1.161	3.512	0.652	1.773
3.5556	1.170	3.641	0.662	1.773
3.6667	1.179	3.772	0.672	1.773
3.7778	1.188	3.903	0.683	1.773
3.8889	1.198	4.036	0.693	1.773
4.0000	1.207	4.170	0.702	1.773
4.1111	1.216	4.304	0.712	1.773
4.2222	1.226	4.440	0.722	1.773
4.3333	1.235	4.577	0.734	1.773
4.4444	1.244	4.715	0.756	1.773
4.5556	1.253	4.853	0.783	1.773

4.6667	1.263	4.993	0.813	1.773
4.7778	1.272	5.134	0.845	1.773
4.8889	1.281	5.276	0.878	1.773
5.0000	1.291	5.419	0.912	1.773
5.1111	1.300	5.563	0.948	1.773
5.2222	1.310	5.708	0.983	1.773
5.3333	1.319	5.854	1.021	1.773
5.4444	1.328	6.001	1.064	1.773
5.5556	1.338	6.149	1.108	1.773
5.6667	1.347	6.299	1.154	1.773
5.7778	1.356	6.449	1.300	1.773
5.8889	1.366	6.600	1.359	1.773
6.0000	1.375	6.753	1.421	1.773
6.1111	1.385	6.906	1.484	1.773
6.2222	1.394	7.060	1.549	1.773
6.3333	1.404	7.216	1.615	1.773
6.4444	1.413	7.372	1.683	1.773
6.5556	1.423	7.530	1.752	1.773
6.6667	1.432	7.689	1.823	1.773
6.7778	1.442	7.848	1.895	1.773
6.8889	1.451	8.009	1.969	1.773
7.0000	1.461	8.171	2.044	1.773
7.1111	1.470	8.334	2.120	1.773
7.2222	1.480	8.498	2.198	1.773
7.3333	1.489	8.663	2.277	1.773
7.4444	1.499	8.829	2.357	1.773
7.5556	1.508	8.996	2.438	1.773
7.6667	1.518	9.164	2.521	1.773
7.7778	1.527	9.333	2.605	1.773
7.8889	1.537	9.504	2.690	1.773
8.0000	1.547	9.675	2.776	1.773
8.1111	1.556	9.847	2.863	1.773
8.2222	1.566	10.02	2.952	1.773
8.3333	1.575	10.19	3.042	1.773
8.4444	1.585	10.37	3.132	1.773
8.5556	1.595	10.54	3.224	1.773
8.6667	1.604	10.72	3.317	1.773
8.7778	1.614	10.90	3.411	1.773
8.8889	1.624	11.08	3.506	1.773
9.0000	1.633	11.26	3.602	1.773
9.1111	1.643	11.44	5.231	1.773
9.2222	1.653	11.63	8.206	1.773
9.3333	1.662	11.81	12.05	1.773
9.4444	1.672	12.00	16.61	1.773
9.5556	1.682	12.18	21.78	1.773
9.6667	1.692	12.37	27.49	1.773
9.7778	1.701	12.56	33.70	1.773
9.8889	1.711	12.75	40.38	1.773
10.000	1.721	12.94	47.48	1.773
10.111	1.731	13.13	54.99	1.773

ANALYSIS RESULTS

Predeveloped Landuse Totals for POC #1
Total Pervious Area:75.8
Total Impervious Area:0

Mitigated Landuse Totals for POC #1
Total Pervious Area:15.4
Total Impervious Area:60.4

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	**Flow(cfs)**
2 year	1.167604

5 year	2.149448
10 year	2.746042
25 year	3.39252
50 year	3.794031
100 year	4.133273

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	Flow(cfs)
2 year	0
5 year	0
10 year	0
25 year	0
50 year	0
100 year	0

Annual Peaks for Predeveloped and Mitigated. POC #1

Year	Predeveloped	Mitigated
1949	1.485	0.000
1950	2.339	0.000
1951	3.563	0.000
1952	0.947	0.000
1953	0.678	0.000
1954	1.169	0.000
1955	2.053	0.000
1956	1.639	0.000
1957	0.818	0.000
1958	1.339	0.000
1959	1.166	0.000
1960	1.779	0.000
1961	1.225	0.000
1962	0.550	0.000
1963	0.721	0.000
1964	1.155	0.000
1965	0.691	0.000
1966	0.842	0.000
1967	1.957	0.000
1968	1.182	0.000
1969	1.058	0.000
1970	0.679	0.000
1971	0.849	0.000
1972	2.577	0.000
1973	1.011	0.000
1974	1.077	0.000
1975	1.383	0.000
1976	0.969	0.000
1977	0.015	0.000
1978	0.808	0.000
1979	0.404	0.000
1980	1.114	0.000
1981	0.667	0.000
1982	0.855	0.000
1983	1.324	0.000
1984	0.819	0.000
1985	0.390	0.000
1986	2.604	0.000
1987	1.920	0.000
1988	0.505	0.000
1989	0.456	0.000
1990	3.409	0.000
1991	3.103	0.000
1992	0.803	0.000
1993	0.980	0.000
1994	0.137	0.000
1995	1.635	0.000
1996	3.271	0.000
1997	2.786	0.000
1998	0.524	0.000

Ranked Annual Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	3.5632	0.0000
2	3.4094	0.0000
3	3.2715	0.0000
4	3.1029	0.0000
5	2.7865	0.0000
6	2.6041	0.0000
7	2.5767	0.0000
8	2.3390	0.0000
9	2.0525	0.0000
10	1.9567	0.0000
11	1.9195	0.0000
12	1.7793	0.0000
13	1.6391	0.0000
14	1.6355	0.0000
15	1.4854	0.0000
16	1.3830	0.0000
17	1.3391	0.0000
18	1.3236	0.0000
19	1.2248	0.0000
20	1.1819	0.0000
21	1.1688	0.0000
22	1.1656	0.0000
23	1.1547	0.0000
24	1.1136	0.0000
25	1.0774	0.0000
26	1.0580	0.0000
27	1.0110	0.0000
28	0.9797	0.0000
29	0.9689	0.0000
30	0.9474	0.0000
31	0.8553	0.0000
32	0.8490	0.0000
33	0.8423	0.0000
34	0.8188	0.0000
35	0.8183	0.0000
36	0.8079	0.0000
37	0.8029	0.0000
38	0.7208	0.0000
39	0.6908	0.0000
40	0.6788	0.0000
41	0.6785	0.0000
42	0.6670	0.0000
43	0.5502	0.0000
44	0.5237	0.0000
45	0.5053	0.0000
46	0.4561	0.0000
47	0.4041	0.0000
48	0.3903	0.0000
49	0.1367	0.0000
50	0.0145	0.0000

POC #1
The Facility PASSED

The Facility PASSED.

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.5838	4004	0	0	Pass
0.6162	3587	0	0	Pass
0.6487	3237	0	0	Pass
0.6811	2933	0	0	Pass
0.7135	2694	0	0	Pass
0.7459	2462	0	0	Pass
0.7784	2281	0	0	Pass
0.8108	2099	0	0	Pass
0.8432	1935	0	0	Pass
0.8756	1797	0	0	Pass
0.9081	1669	0	0	Pass
0.9405	1566	0	0	Pass

0.9729	1471	0	0	Pass
1.0053	1381	0	0	Pass
1.0378	1293	0	0	Pass
1.0702	1192	0	0	Pass
1.1026	1115	0	0	Pass
1.1351	1033	0	0	Pass
1.1675	978	0	0	Pass
1.1999	917	0	0	Pass
1.2323	869	0	0	Pass
1.2648	818	0	0	Pass
1.2972	773	0	0	Pass
1.3296	730	0	0	Pass
1.3620	689	0	0	Pass
1.3945	655	0	0	Pass
1.4269	626	0	0	Pass
1.4593	599	0	0	Pass
1.4917	565	0	0	Pass
1.5242	535	0	0	Pass
1.5566	508	0	0	Pass
1.5890	488	0	0	Pass
1.6215	449	0	0	Pass
1.6539	428	0	0	Pass
1.6863	407	0	0	Pass
1.7187	381	0	0	Pass
1.7512	359	0	0	Pass
1.7836	338	0	0	Pass
1.8160	315	0	0	Pass
1.8484	301	0	0	Pass
1.8809	280	0	0	Pass
1.9133	260	0	0	Pass
1.9457	250	0	0	Pass
1.9781	237	0	0	Pass
2.0106	227	0	0	Pass
2.0430	213	0	0	Pass
2.0754	198	0	0	Pass
2.1079	193	0	0	Pass
2.1403	186	0	0	Pass
2.1727	178	0	0	Pass
2.2051	172	0	0	Pass
2.2376	161	0	0	Pass
2.2700	154	0	0	Pass
2.3024	147	0	0	Pass
2.3348	142	0	0	Pass
2.3673	132	0	0	Pass
2.3997	128	0	0	Pass
2.4321	119	0	0	Pass
2.4645	112	0	0	Pass
2.4970	101	0	0	Pass
2.5294	96	0	0	Pass
2.5618	91	0	0	Pass
2.5942	82	0	0	Pass
2.6267	77	0	0	Pass
2.6591	65	0	0	Pass
2.6915	61	0	0	Pass
2.7240	55	0	0	Pass
2.7564	51	0	0	Pass
2.7888	48	0	0	Pass
2.8212	43	0	0	Pass
2.8537	42	0	0	Pass
2.8861	36	0	0	Pass
2.9185	34	0	0	Pass
2.9509	29	0	0	Pass
2.9834	27	0	0	Pass
3.0158	25	0	0	Pass
3.0482	21	0	0	Pass
3.0806	19	0	0	Pass
3.1131	18	0	0	Pass
3.1455	15	0	0	Pass
3.1779	14	0	0	Pass
3.2104	11	0	0	Pass
3.2428	11	0	0	Pass

3.2752	9	0	0	Pass
3.3076	8	0	0	Pass
3.3401	8	0	0	Pass
3.3725	8	0	0	Pass
3.4049	5	0	0	Pass
3.4373	3	0	0	Pass
3.4698	3	0	0	Pass
3.5022	2	0	0	Pass
3.5346	2	0	0	Pass
3.5670	0	0	0	Pass
3.5995	0	0	0	Pass
3.6319	0	0	0	Pass
3.6643	0	0	0	Pass
3.6968	0	0	0	Pass
3.7292	0	0	0	Pass
3.7616	0	0	0	Pass
3.7940	0	0	0	Pass

Water Quality BMP Flow and Volume for POC #1
On-line facility volume: 0 **acre-feet**
On-line facility target flow: 0 **cfs.**
Adjusted for 15 min: 0 **cfs.**
Off-line facility target flow: 0 **cfs.**
Adjusted for 15 min: 0 **cfs.**

Perlnd and Implnd Changes
No changes have been made.

Flow Control Sizing Calcs – Alt. 3 (Regional, SCC Greenwood Parking Lot, Expansion behind M1 Dam)

- **44 ac Aurora Square tributary area with 80% impervious coverage**
- **31.8 ac Shoreline Community College**
- **55 ac additional tributary area from Town Center and Aurora Ave redevelopment**
- **2 in/hour infiltration per SCC preliminary geotechnical study**
- **Resulting facility size 20.7 ac-ft (as expansion to existing facility)**

WWHM4
PROJECT REPORT

Project Name: SCC-1
Site Name: Aurora Sq - SCC
Site Address:
City :
Report Date: 9/30/2014
Gage : Seatac
Data Start : 1948/10/01
Data End : 1998/09/30
Precip Scale: 0.83
Version : 2014/02/14

Low Flow Threshold for POC 1 : 50 Percent of the 2 Year

High Flow Threshold for POC 1: 50 year

PREDEVELOPED LAND USE

Name : SCC-LRDP
Bypass: No

GroundWater: No

Pervious Land Use	Acres
C, Forest, Flat	31.8
Pervious Total	31.8

Impervious Land Use	Acres
Impervious Total	0
Basin Total	31.8

Element Flows To:

Surface	Interflow	Groundwater

Name : AuroraSq
Bypass: No

GroundWater: No

Pervious Land Use	Acres
C, Forest, Flat	44
Pervious Total	44

Impervious Land Use	Acres

Impervious Total 0

Basin Total 44

Element Flows To:

Surface	Interflow	Groundwater

Name : Boeing
Bypass: No

GroundWater: No

Pervious Land Use	Acres
C, Forest, Flat	55
Pervious Total	55

Impervious Land Use	Acres
Impervious Total	0
Basin Total	55

Element Flows To:

Surface	Interflow	Groundwater

MITIGATED LAND USE

Name : SCC-LRDP
Bypass: No

GroundWater: No

Pervious Land Use	Acres
C, Lawn, Flat	6.6
Pervious Total	6.6

Impervious Land Use	Acres
PARKING FLAT	25.2
Impervious Total	25.2
Basin Total	31.8

Element Flows To:

Surface	Interflow	Groundwater
Trapezoidal Pond 1	Trapezoidal Pond 1	

Name : AuroraSq
Bypass: No

GroundWater: No

Pervious Land Use	Acres
C, Lawn, Flat	8.8
Pervious Total	8.8

Impervious Land Use	Acres
PARKING FLAT	35.2
Impervious Total	35.2
Basin Total	44

Element Flows To:

Surface	Interflow	Groundwater
Trapezoidal Pond 1	Trapezoidal Pond 1	

Name : Trapezoidal Pond 1
Bottom Length: 606.28 ft.
Bottom Width: 93.27 ft.
Depth: 13 ft.
Volume at riser head: 20.6990 acre-ft.
Infiltration On
Infiltration rate: 2
Infiltration safety factor: 1
Total Volume Infiltrated (ac-ft): 10268.126
Total Volume Through Riser (ac-ft): 1730.014
Total Volume Through Facility (ac-ft): 11998.14
Percent Infiltrated: 85.58
Side slope 1: 2 To 1
Side slope 2: 2 To 1
Side slope 3: 2 To 1
Side slope 4: 2 To 1
Discharge Structure
Riser Height: 12 ft.
Riser Diameter: 54 in.
Notch Type: Rectangular
Notch Width: 0.078 ft.
Notch Height: 6.613 ft.
Orifice 1 Diameter: 4.336 in. **Elevation:** 0 ft.

Element Flows To:

Outlet 1	Outlet 2

Pond Hydraulic Table

Stage(ft)	Area(ac)	Volume(ac-ft)	Discharge(cfs)	Infilt(cfs)
0.0000	1.298	0.000	0.000	0.000
0.1444	1.307	0.188	0.187	2.618
0.2889	1.316	0.377	0.265	2.618
0.4333	1.326	0.568	0.325	2.618
0.5778	1.335	0.760	0.375	2.618
0.7222	1.344	0.954	0.419	2.618
0.8667	1.354	1.149	0.459	2.618
1.0111	1.363	1.345	0.496	2.618
1.1556	1.372	1.543	0.530	2.618
1.3000	1.382	1.742	0.563	2.618
1.4444	1.391	1.942	0.593	2.618
1.5889	1.401	2.144	0.622	2.618
1.7333	1.410	2.347	0.650	2.618
1.8778	1.420	2.551	0.676	2.618
2.0222	1.429	2.757	0.702	2.618
2.1667	1.439	2.964	0.726	2.618

2.3111	1.448	3.173	0.750	2.618
2.4556	1.458	3.383	0.773	2.618
2.6000	1.467	3.594	0.796	2.618
2.7444	1.477	3.807	0.818	2.618
2.8889	1.486	4.021	0.839	2.618
3.0333	1.496	4.236	0.860	2.618
3.1778	1.506	4.453	0.880	2.618
3.3222	1.515	4.672	0.900	2.618
3.4667	1.525	4.891	0.919	2.618
3.6111	1.535	5.112	0.938	2.618
3.7556	1.544	5.335	0.956	2.618
3.9000	1.554	5.558	0.975	2.618
4.0444	1.564	5.784	0.993	2.618
4.1889	1.573	6.010	1.010	2.618
4.3333	1.583	6.238	1.027	2.618
4.4778	1.593	6.468	1.044	2.618
4.6222	1.603	6.699	1.061	2.618
4.7667	1.612	6.931	1.078	2.618
4.9111	1.622	7.164	1.094	2.618
5.0556	1.632	7.400	1.110	2.618
5.2000	1.642	7.636	1.126	2.618
5.3444	1.652	7.874	1.141	2.618
5.4889	1.661	8.113	1.165	2.618
5.6333	1.671	8.354	1.202	2.618
5.7778	1.681	8.596	1.245	2.618
5.9222	1.691	8.840	1.292	2.618
6.0667	1.701	9.085	1.342	2.618
6.2111	1.711	9.331	1.392	2.618
6.3556	1.721	9.579	1.444	2.618
6.5000	1.731	9.829	1.503	2.618
6.6444	1.741	10.08	1.565	2.618
6.7889	1.751	10.33	1.727	2.618
6.9333	1.761	10.58	1.810	2.618
7.0778	1.771	10.84	1.897	2.618
7.2222	1.781	11.09	1.987	2.618
7.3667	1.791	11.35	2.079	2.618
7.5111	1.801	11.61	2.175	2.618
7.6556	1.811	11.87	2.273	2.618
7.8000	1.821	12.13	2.374	2.618
7.9444	1.831	12.40	2.477	2.618
8.0889	1.841	12.66	2.583	2.618
8.2333	1.852	12.93	2.691	2.618
8.3778	1.862	13.20	2.802	2.618
8.5222	1.872	13.47	2.915	2.618
8.6667	1.882	13.74	3.030	2.618
8.8111	1.892	14.01	3.148	2.618
8.9556	1.903	14.29	3.267	2.618
9.1000	1.913	14.56	3.389	2.618
9.2444	1.923	14.84	3.512	2.618
9.3889	1.933	15.12	3.638	2.618
9.5333	1.944	15.40	3.766	2.618
9.6778	1.954	15.68	3.895	2.618
9.8222	1.964	15.96	4.027	2.618
9.9667	1.975	16.25	4.160	2.618
10.111	1.985	16.53	4.296	2.618
10.256	1.995	16.82	4.433	2.618
10.400	2.006	17.11	4.572	2.618
10.544	2.016	17.40	4.713	2.618
10.689	2.026	17.69	4.855	2.618
10.833	2.037	17.98	4.999	2.618
10.978	2.047	18.28	5.145	2.618
11.122	2.058	18.58	5.293	2.618
11.267	2.068	18.87	5.442	2.618
11.411	2.079	19.17	5.593	2.618
11.556	2.089	19.48	5.746	2.618
11.700	2.100	19.78	5.900	2.618
11.844	2.110	20.08	6.056	2.618
11.989	2.121	20.39	6.213	2.618
12.133	2.131	20.69	8.368	2.618
12.278	2.142	21.00	12.66	2.618
12.422	2.152	21.31	18.27	2.618

12.567	2.163	21.63	24.96	2.618
12.711	2.174	21.94	32.55	2.618
12.856	2.184	22.25	40.96	2.618
13.000	2.195	22.57	50.12	2.618
13.144	2.206	22.89	59.96	2.618

Name : Town Ctr & Aurora
Bypass: No

GroundWater: No

Pervious Land Use	Acres
C, Lawn, Flat	11
Pervious Total	**11**

Impervious Land Use	Acres
PARKING FLAT	44
Impervious Total	**44**
Basin Total	**55**

Element Flows To:

Surface	Interflow	Groundwater
Trapezoidal Pond 1	Trapezoidal Pond 1	

ANALYSIS RESULTS

Predeveloped Landuse Totals for POC #1
Total Pervious Area:130.8
Total Impervious Area:0

Mitigated Landuse Totals for POC #1
Total Pervious Area:26.4
Total Impervious Area:104.4

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	Flow(cfs)
2 year	2.014809
5 year	3.709073
10 year	4.738551
25 year	5.854109
50 year	6.546955
100 year	7.132348

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	Flow(cfs)
2 year	1.556611
5 year	2.715601
10 year	3.767813
25 year	5.498113
50 year	7.132244
100 year	9.112687

Annual Peaks for Predeveloped and Mitigated. POC #1

Year	Predeveloped	Mitigated
1949	2.563	1.104

1950	4.036	1.657
1951	6.149	5.407
1952	1.635	1.020
1953	1.171	1.091
1954	2.017	1.132
1955	3.542	2.565
1956	2.828	1.626
1957	1.412	1.338
1958	2.311	1.291
1959	2.011	1.209
1960	3.070	4.969
1961	2.113	1.298
1962	0.949	0.934
1963	1.244	1.201
1964	1.993	1.237
1965	1.192	1.542
1966	1.453	0.973
1967	3.376	2.067
1968	2.040	1.040
1969	1.826	1.248
1970	1.171	1.155
1971	1.465	1.499
1972	4.446	3.415
1973	1.745	1.061
1974	1.859	0.980
1975	2.387	2.438
1976	1.672	1.223
1977	0.025	0.980
1978	1.394	1.564
1979	0.697	0.937
1980	1.922	3.345
1981	1.151	1.043
1982	1.476	5.249
1983	2.284	1.746
1984	1.413	1.030
1985	0.673	1.250
1986	4.494	4.166
1987	3.312	5.126
1988	0.872	1.048
1989	0.787	0.731
1990	5.883	4.092
1991	5.354	5.596
1992	1.385	1.065
1993	1.691	1.162
1994	0.236	0.727
1995	2.822	1.854
1996	5.645	5.128
1997	4.808	6.151
1998	0.904	1.058

Ranked Annual Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	6.1487	6.1514
2	5.8832	5.5961
3	5.6453	5.4073
4	5.3544	5.2488
5	4.8083	5.1281
6	4.4936	5.1264
7	4.4464	4.9685
8	4.0361	4.1660
9	3.5418	4.0915
10	3.3765	3.4151
11	3.3123	3.3447
12	3.0704	2.5648
13	2.8285	2.4377
14	2.8222	2.0672
15	2.5631	1.8538
16	2.3865	1.7456
17	2.3108	1.6573
18	2.2840	1.6261

19	2.1134	1.5636
20	2.0395	1.5424
21	2.0169	1.4985
22	2.0114	1.3377
23	1.9925	1.2984
24	1.9217	1.2913
25	1.8592	1.2503
26	1.8257	1.2479
27	1.7446	1.2372
28	1.6906	1.2232
29	1.6719	1.2087
30	1.6348	1.2012
31	1.4759	1.1615
32	1.4650	1.1547
33	1.4535	1.1322
34	1.4129	1.1042
35	1.4121	1.0910
36	1.3942	1.0652
37	1.3854	1.0605
38	1.2438	1.0578
39	1.1920	1.0480
40	1.1713	1.0428
41	1.1708	1.0399
42	1.1510	1.0299
43	0.9493	1.0199
44	0.9037	0.9800
45	0.8720	0.9796
46	0.7871	0.9734
47	0.6974	0.9370
48	0.6735	0.9340
49	0.2359	0.7311
50	0.0250	0.7271

POC #1
The Facility PASSED

The Facility PASSED.

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
1.0074	3996	2486	62	Pass
1.0634	3587	2016	56	Pass
1.1193	3230	1572	48	Pass
1.1753	2933	1293	44	Pass
1.2312	2692	1153	42	Pass
1.2872	2458	1050	42	Pass
1.3431	2278	975	42	Pass
1.3991	2094	900	42	Pass
1.4550	1934	830	42	Pass
1.5110	1796	762	42	Pass
1.5670	1672	711	42	Pass
1.6229	1566	681	43	Pass
1.6789	1469	658	44	Pass
1.7348	1382	635	45	Pass
1.7908	1292	616	47	Pass
1.8467	1194	588	49	Pass
1.9027	1114	562	50	Pass
1.9586	1034	539	52	Pass
2.0146	978	510	52	Pass
2.0706	914	494	54	Pass
2.1265	869	475	54	Pass
2.1825	816	462	56	Pass
2.2384	773	446	57	Pass
2.2944	730	435	59	Pass
2.3503	689	422	61	Pass
2.4063	655	404	61	Pass
2.4622	626	388	61	Pass
2.5182	599	375	62	Pass
2.5741	565	358	63	Pass
2.6301	535	345	64	Pass
2.6861	508	331	65	Pass

2.7420	488	314	64	Pass
2.7980	449	300	66	Pass
2.8539	428	286	66	Pass
2.9099	407	278	68	Pass
2.9658	380	271	71	Pass
3.0218	360	259	71	Pass
3.0777	338	250	73	Pass
3.1337	316	232	73	Pass
3.1897	301	221	73	Pass
3.2456	280	212	75	Pass
3.3016	260	198	76	Pass
3.3575	250	186	74	Pass
3.4135	237	179	75	Pass
3.4694	227	172	75	Pass
3.5254	212	164	77	Pass
3.5813	198	160	80	Pass
3.6373	193	153	79	Pass
3.6932	186	148	79	Pass
3.7492	178	143	80	Pass
3.8052	172	136	79	Pass
3.8611	161	133	82	Pass
3.9171	154	128	83	Pass
3.9730	147	123	83	Pass
4.0290	142	120	84	Pass
4.0849	132	110	83	Pass
4.1409	128	102	79	Pass
4.1968	121	98	80	Pass
4.2528	112	95	84	Pass
4.3088	101	90	89	Pass
4.3647	96	87	90	Pass
4.4207	91	85	93	Pass
4.4766	82	80	97	Pass
4.5326	76	73	96	Pass
4.5885	65	68	104	Pass
4.6445	61	65	106	Pass
4.7004	55	59	107	Pass
4.7564	51	55	107	Pass
4.8123	47	48	102	Pass
4.8683	43	45	104	Pass
4.9243	42	40	95	Pass
4.9802	36	36	100	Pass
5.0362	34	33	97	Pass
5.0921	29	28	96	Pass
5.1481	27	24	88	Pass
5.2040	24	20	83	Pass
5.2600	21	16	76	Pass
5.3159	19	13	68	Pass
5.3719	18	12	66	Pass
5.4279	15	9	60	Pass
5.4838	14	9	64	Pass
5.5398	11	7	63	Pass
5.5957	11	6	54	Pass
5.6517	9	5	55	Pass
5.7076	8	5	62	Pass
5.7636	8	4	50	Pass
5.8195	8	3	37	Pass
5.8755	5	3	60	Pass
5.9314	3	3	100	Pass
5.9874	3	3	100	Pass
6.0434	2	2	100	Pass
6.0993	2	1	50	Pass
6.1553	0	0	50	Pass
6.2112	0	0	0	Pass
6.2672	0	0	0	Pass
6.3231	0	0	0	Pass
6.3791	0	0	0	Pass
6.4350	0	0	0	Pass
6.4910	0	0	0	Pass
6.5470	0	0	0	Pass

Water Quality BMP Flow and Volume for POC #1
On-line facility volume: 0 **acre-feet**
On-line facility target flow: 0 **cfs.**
Adjusted for 15 min: 0 **cfs.**
Off-line facility target flow: 0 **cfs.**
Adjusted for 15 min: 0 **cfs.**

Perlnd and Implnd Changes
No changes have been made.

APPENDIX C – Planning-Level Cost Estimates

CITY OF SHORELINE
AURORA SQUARE COMMUNITY RENEWAL AREA
STORMWATER CONCEPT DEVELOPMENT

KPG
SEATTLE · TACOMA

Planning Level Cost Estimate
Stormwater Flow Control Alternatives Analysis
October 2014

ALTERNATIVE 1 - ON-SITE FLOW CONTROL - VAULTS

Bid Item No.	Item	Quantity	Unit	Unit Price	Total Cost
	Mobilization	1	LS	$ 623,000.00	$ 623,000.00
	Concrete Detention Vault(s)	958320	CF	$ 13.00	$ 12,458,160.00
				Subtotal	$ 13,081,160.00
				Contingency (20%)	$ 2,616,232.00
				Construction Subtotal (Rounded)	$ 15,700,000.00
				Sales Tax (9.5%)	$ 1,491,500.00
				Prelim. Engineering, Final Engineering, Admin. (25%)	$ 3,925,000.00
				Construction Management (10%)	$ 1,570,000.00
				Permitting (0%)	$ -
				Total Planning-Level Cost Estimate (Rounded)	**$ 22,700,000.00**

Notes:
1. This planning-level cost estimate has been prepared for the purpose of alternatives analysis only.

CITY OF SHORELINE
AURORA SQUARE COMMUNITY RENEWAL AREA
STORMWATER CONCEPT DEVELOPMENT

KPG
SEATTLE · TACOMA

Planning Level Cost Estimate
Stormwater Flow Control Alternatives Analysis
October 2014

ALTERNATIVE 2 - REGIONAL FLOW CONTROL POND CONCEPT #1 (ADJACENT TO STREAM)

Bid Item No.	Item	Quantity	Unit	Unit Price	Total Cost
1	Mobilization (8%)		LS	$ 196,000.00	$ 196,000.00
2	Pond Earthwork - Complete	43896	CY	$ 20.00	$ 877,920.00
3	Control Structure	1	EA	$ 10,000.00	$ 10,000.00
4	Hydrodynamic Separator	3	EA	$ 40,000.00	$ 120,000.00
5	Flow Splitter - Vault	1	EA	$ 20,000.00	$ 20,000.00
6	Control Structure	1	EA	$ 8,000.00	$ 8,000.00
7	48" Manhole	2	EA	$ 3,500.00	$ 7,000.00
8	18" Storm Drain Pipe	750	LF	$ 75.00	$ 56,250.00
9	24" Storm Drain Pipe	260	LF	$ 85.00	$ 22,100.00
10	Landscaping - Slopes and Buffers	65000	SF	$ 1.00	$ 65,000.00
11	Temporary Erosion Control (10%)		LS	$ 244,000.00	$ 244,000.00
				Subtotal	$ 1,626,270.00
				Contingency (50%)	$ 813,135.00
				Construction Subtotal (Rounded)	$ 2,440,000.00
				Sales Tax (9.5%)	$ 231,800.00
				Prelim. Engineering, Final Engineering, Admin. (35%)	$ 854,000.00
				Construction Management (20%)	$ 488,000.00
				Permitting (10%)	$ 244,000.00
				Total Planning-Level Cost Estimate (Rounded)	**$ 4,260,000.00**

Notes:
1. This planning-level cost estimate has been prepared for the purpose of alternatives analysis only.

CITY OF SHORELINE
AURORA SQUARE COMMUNITY RENEWAL AREA
STORMWATER CONCEPT DEVELOPMENT

KPG
SEATTLE · TACOMA

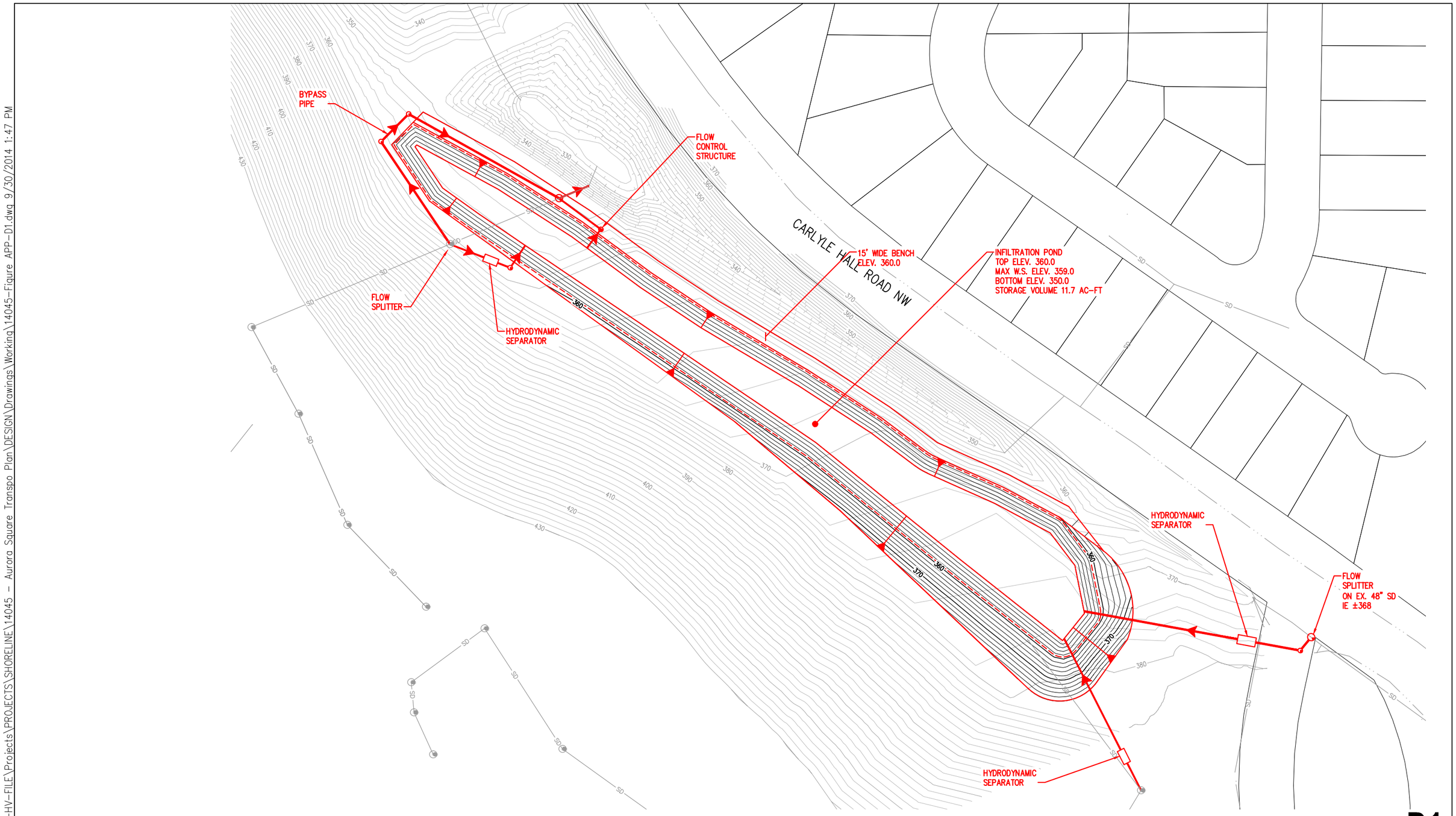
Planning Level Cost Estimate
Stormwater Flow Control Alternatives Analysis
October 2014

ALTERNATIVE 3 - REGIONAL FLOW CONTROL POND CONCEPT #2 (IN-STREAM)

Item No.	Item	Quantity	Unit	Unit Price	Total Cost
1	Mobilization (8%)		LS	$ 268,000.00	$ 268,000.00
2	Pond Earthwork - Complete	69700	CY	$ 20.00	$ 1,394,000.00
3	Control Structures - For Added Pond Cells	2	EA	$ 10,000.00	$ 20,000.00
4	Hydrodynamic Separator	2	EA	$ 40,000.00	$ 80,000.00
5	Control Structure	2	EA	$ 10,000.00	$ 20,000.00
6	48" Manhole	3	EA	$ 3,500.00	$ 10,500.00
7	18" Storm Drain Pipe	180	LF	$ 75.00	$ 13,500.00
8	Landscaping - Slopes and Buffers	90000	SF	$ 1.00	$ 90,000.00
9	Temporary Erosion Control (10%)		LS	$ 335,000.00	$ 335,000.00
				Subtotal	$ 2,231,000.00
				Contingency (50%)	$ 1,115,500.00
				Construction Subtotal (Rounded)	$ 3,350,000.00
				Sales Tax (9.5%)	$ 318,250.00
				Prelim. Engineering, Final Engineering, Admin. (35%)	$ 1,172,500.00
				Construction Management (20%)	$ 670,000.00
				Permitting (20%)	$ 670,000.00
				Total Planning-Level Cost Estimate (Rounded)	**$6,180,000.00**

Notes:
1. This planning-level cost estimate has been prepared for the purpose of alternatives analysis only.

APPENDIX D – Regional Facility Conceptual Layouts



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CITY OF SHORELINE

REGIONAL FLOW CONTROL POND CONCEPT #1

AURORA SQUARE CRA STORMWATER CONCEPT STUDY

PLAN

0 25 50 100 150

SCALE IN FEET

KPG

753 9th Ave N
Seattle, WA 98109
(206) 286-1640
www.kpg.com

2502 Jefferson Ave
Tacoma, WA 98402
(253) 627-0720

M1 POND EXPANSION
MAX W.S ELEV. 346.5 (TOP OF EX. RISER)
POND BOTTOM ELEV. 326.0
APPROX. ADDED VOLUME: 9.8 AC-FT
APPROX. EXCAVATION VOLUME:

ADDDED UPPER POND CELLS
MAX W.S ELEV. 356.0, 366.0
POND BOTTOM ELEV. 346.0, 356.0
APPROX. ADDED VOLUME: 11.9 AC-FT
APPROX. EXCAVATION VOLUME:

HYDRODYNAMIC SEPARATOR

CARLYLE HALL ROAD NW

D2

\\SEA-HV-FILE\Projects\PROJECTS\SHORELINE\14045 - Aurora Square Transpo Plan\DESIGN\Drawings\Working\14045-Figure APP-D2.dwg 9/30/2014 1:48 PM

CITY OF SHORELINE

REGIONAL FLOW CONTROL POND CONCEPT #2

AURORA SQUARE CRA STORMWATER CONCEPT STUDY

PLAN

0 25 50 100 150
SCALE IN FEET

KPG
753 9th Ave N
Seattle, WA 98109
(206) 286-1640
www.kpg.com

2502 Jefferson Ave
Tacoma, WA 98402
(253) 627-0720

APPENDIX D: DRAFT PLANNED ACTION ORDINANCE

ORDINANCE NO XX

AN ORDINANCE OF THE CITY OF SHORELINE, WASHINGTON, ESTABLISHING A PLANNED ACTION FOR THE AURORA SQUARE COMMUNITY RENEWAL AREA PURSUANT TO THE STATE ENVIRONMENTAL POLICY ACT.

WHEREAS, the State Environmental Policy Act (SEPA) and its implementing regulations provide for the integration of environmental review with land use planning and project review through the designation of planned actions by jurisdictions planning under the Growth Management Act (GMA), such as the City of Shoreline ("City"); and

WHEREAS, Section 43.21C.440 of the Revised Code of Washington (RCW), Sections 197-11-164 through 172 of the Washington Administrative Code (WAC), and Section 16.10.180 of the Shoreline Municipal Code (SMC) allow for and govern the adoption and application of a planned action designation under SEPA; and

WHEREAS, the State Department of Commerce (DOC) has studied planned actions in various communities throughout the state and found that predefined mitigation as allowed under a planned action ordinance has resulted in increased certainty and predictability for development, time and cost savings for development project proponents and cities, and increased revenues for cities when used with other economic development tools; and

WHEREAS, the designation of a planned action expedites the permitting process for projects of which the impacts have been previously addressed in an environmental impact statement (EIS); and

WHEREAS, a subarea of the City commonly referred to as the "Aurora Square Community Renewal Area (Aurora Square CRA)", as depicted on the map attached hereto as Exhibit A and incorporated herein by this reference, on September 4, 2012, was designated as a Community Renewal Area by Resolution No. 333 and identified as a planned action area for future redevelopment ("Planned Action Area"); and

WHEREAS, the City has developed and adopted a Community Renewal Plan complying with the GMA (RCW 36.70A), dated July 8, 2013, Res. No. 345, to guide the redevelopment of the Planned Action Area ("Aurora Square Community Renewal Plan"); and

WHEREAS, after extensive public participation and coordination with all affected parties, the City, as lead SEPA agency, issued the Aurora Square Planned Action Final Environmental Impact Statement ("FEIS") dated XXX, 2015 which identifies the impacts and mitigation measures associated with planned development in the Planned Action Area as identified in the Aurora Square Community Renewal Plan; the FEIS includes by incorporation the Aurora Square Planned Action Draft Environmental Impact Statement issued on December 12, 2014 (collectively referred to herein as the "Planned Action EIS"); and

WHEREAS, the City desires to designate a planned action under SEPA for the Aurora Square CRA ("Planned Action"); and

WHEREAS, adopting a Planned Action for the Aurora Square CRA with appropriate standards and procedures will help achieve efficient permit processing and promote environmental quality protection; and

WHEREAS, the City has adopted development regulations and ordinances that will help protect the environment and will adopt regulations to guide the allocation, form, and quality of development in the Aurora Square CRA; and

WHEREAS, the City Council finds that adopting this Ordinance is in the public interest and will advance the public health, safety, and welfare;

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF SHORELINE, WASHINGTON DOES HEREBY ORDAIN AS FOLLOWS:

Section I. *Purpose*. The purpose of this Ordinance is to:

A. Combine environmental analysis, land use plans, development regulations, and City codes and ordinances together with the mitigation measures in the Planned Action EIS to mitigate environmental impacts and process Planned Action development applications in the Planned Action Area;

B. Designate the Aurora Square CRA subarea shown in Exhibit A as a Planned Action Area for purposes of environmental review and permitting of designated Planned Action Projects pursuant RCW 43.21C.440;

C. Determine that the Planned Action EIS meets the requirements of a planned action EIS pursuant to SEPA;

D. Establish criteria and procedures for the designation of certain projects within the Planned Action Area as "Planned Action Projects" consistent with RCW 43.21C.440;

E. Provide clear definition as to what constitutes a Planned Action Project within the Planned Action Area, the criteria for Planned Action Project approval, and how development project applications that qualify as Planned Action Projects will be processed by the City;

F. Streamline and expedite the land use permit review process by relying on the Planned Action EIS; and

G. Apply applicable regulations within the City's development regulations and the mitigation framework contained in this Ordinance for the processing of Planned Action Project applications and to incorporate the applicable mitigation measures into the underlying project permit conditions in order to address the impacts of future development contemplated by this Ordinance.

Section II. *Findings*. The City Council finds as follows:

A. The Recitals above are adopted herein as Findings of the City Council.

B. The City is subject to the requirements of the GMA.

C. The City has adopted a Comprehensive Plan and zoning complying with the GMA.

D. The City has adopted the Aurora Square Community Renewal Plan consistent with RCW 35.81.

E. The City is adopting Comprehensive Plan capital facility element, sign code, and noise development regulations to implement said Plans in subsection C and D, including this Ordinance.

F. The Planned Action EIS adequately identifies and addresses the probable significant environmental impacts associated with the type and amount of development planned to occur in the designated Planned Action Area.

G. The mitigation measures identified in the Planned Action EIS, attached to this Ordinance as Exhibit C and incorporated herein by reference, together with adopted City development regulations are adequate to mitigate significant adverse impacts from development within the Planned Action Area.

H. The Aurora Square Community Renewal Plan and Planned Action EIS identify the location, type, and amount of development that is contemplated by the Planned Action.

I. Future projects that are implemented consistent with the Planned Action will protect the environment, benefit the public, and enhance economic development.

J. The City provided several opportunities for meaningful public involvement and review in the Aurora Square CRA Planned Action EIS processes, including a community meeting consistent with RCW 43.21C.440; has considered all comments received; and, as appropriate, has modified the proposal or mitigation measures in response to comments.

K. Essential public facilities as defined in RCW 36.70A.200 are excluded from the Planned Action as designated herein and are not eligible for review or permitting as Planned Action Projects unless they are accessory to or part of a project that otherwise qualifies as a Planned Action Project.

L. The designated Planned Action Area is located entirely within a UGA.

M. Implementation of the mitigation measures identified in the Planned Action EIS will provide for adequate public services and facilities to serve the proposed Planned Action Area.

Section III. ***Procedures and Criteria for Evaluating and Determining Planned Action Projects within the Planned Action Area.***

A. Planned Action Area. This "Planned Action" designation shall apply to the area shown in Exhibit A of this Ordinance.

B. Environmental Document. A Planned Action Project determination for a site-specific project application within the Planned Action Area shall be based on the environmental analysis contained in the Planned Action EIS. The mitigation measures contained in Exhibit C of this Ordinance are based upon the findings of the Planned Action EIS and shall, along with adopted City regulations, provide the framework the City will use to apply appropriate conditions on qualifying Planned Action Projects within the Planned Action Area.

C. Planned Action Project Designated. Land uses and activities described in the Planned Action EIS, subject to the thresholds described in Subsection III.D of this Ordinance and the mitigation measures contained in Exhibit C of this Ordinance, are designated "Planned Action Projects" pursuant to RCW 43.21C.440. A development application for a site-specific project located within the Planned Action Area shall be designated a Planned Action Project if it meets the criteria set forth in Subsection III.D of this Ordinance and all other applicable laws, codes, development regulations, and standards of the City, including this Ordinance, are met.

D. Planned Action Qualifications. The following thresholds shall be used to determine if a site-specific development proposed within the Planned Action Area was contemplated as a Planned Action Project and has had its environmental impacts evaluated in the Planned Action EIS:

(1) Qualifying Land Uses.

(a) Planned Action Categories: A land use can qualify as a Planned Action Project land use when:

i. it is within the Planned Action Area as shown in Exhibit A of this Ordinance;

ii. it is within one or more of the land use categories studied in the EIS: retail, office, residential, entertainment, and open space; and

iii. it is listed in development regulations applicable to the zoning classifications applied to properties within the Planned Action Area.

A Planned Action Project may be a single Planned Action land use or a combination of Planned Action land uses together in a mixed-use development. Planned Action land uses may include accessory uses.

(b) Public Services: The following public services, infrastructure, and utilities can also qualify as Planned Actions: roads designed for the planned action, stormwater, utilities, parks, trails, and similar facilities developed consistent with the Planned Action EIS mitigation measures, City and special district design standards, critical area regulations, and the Shoreline Municipal Code.

(2) Development Thresholds:

(a) Land Use: The following thresholds of new land uses are contemplated by the Planned Action:

Feature	Alternative 2 – Phased Development	Alternative 3 - Planned Development
Residential Dwellings (units)	500	1,000
Retail Square Feet	125,000	250,000
Office Square Feet	125,000	250,000

(b) Shifting development amounts between land uses in identified in Subsection III.D(2)(a) may be permitted when the total build-out is less than the aggregate amount of development reviewed in the Planned Action EIS; the traffic trips for the preferred alternative are not exceeded; and, the development impacts identified in the Planned Action EIS are mitigated consistent with Exhibit B of this Ordinance.

(c) Further environmental review may be required pursuant to WAC 197-11-172, if any individual Planned Action Project or combination of Planned Action Projects exceeds the development thresholds specified in this Ordinance and/or alter the assumptions and analysis in the Planned Action EIS.

(3) Transportation Thresholds:

(a) Trip Ranges & Thresholds. The number of new PM peak hour trips anticipated in the Planned Action Area and reviewed in the Planned Action EIS for 2035 is as follows:

Peak Hour Inbound and Outbound trips during the PM Peak Hour by Alternative

	No Action Alternative 1	Phased Growth Alternative 2	Alternative 2 Net Trips	Planned Growth Alternative 3	Alternative 3 Net Trips
Inbound Trips	553	933	380	1,313	760
Outbound Trips	737	1,159	422	1,581	844
Total Trips	1,289	2,092	803	2,894	1,605

Source: KPG 2014

(b) Concurrency. All Planned Action Projects shall meet the transportation concurrency requirements and the Level of Service (LOS) thresholds established in SMC 20.60.140 Adequate Streets.

(c) Access and Circulation. All Planned Action Projects shall meet access standards established in SMC 20.60.150 Adequate Access. All Planned Action Projects shall provide frontage improvements for public roadways per Exhibit C. All Planned Action Projects shall provide for a coordinated onsite circulation system per Exhibit C.

(d) The responsible City official shall require documentation by Planned Action Project applicants demonstrating that the total trips identified in Subsection III.D(3)(a) are not exceeded, that the project meets the concurrency and intersection standards of Subsection III.D(3)(b), and that the project has mitigated impacts consistent with Subsection III.D (3)(c).

(e) Discretion.

i. The responsible City official shall have discretion to determine incremental and total trip generation, consistent with the Institute of Traffic Engineers (ITE) Trip Generation Manual (latest edition) or an alternative manual accepted by the City's Public Works Director at his or her sole discretion, for each project permit application proposed under this Planned Action.

ii. The responsible City official shall have discretion to condition Planned Action Project applications to meet the provisions of this Planned Action Ordinance and the Shoreline Municipal Code.

iii. The responsible City official shall have the discretion to adjust the allocation of responsibility for required improvements between individual Planned Action Projects based upon their identified impacts.

(4) Elements of the Environment and Degree of Impacts. A proposed project that would result in a significant change in the type or degree of adverse impacts to any element(s) of the environment analyzed in the Planned Action EIS would not qualify as a Planned Action Project.

(5) Changed Conditions. Should environmental conditions change significantly from those analyzed in the Planned Action EIS, the City's SEPA Responsible Official may determine that the Planned Action Project designation is no longer applicable until supplemental environmental review is conducted.

E. Planned Action Project Review Criteria.

(1) The City's SEPA Responsible Official, or authorized representative, may designate as a Planned Action Project, pursuant to RCW 43.21C.440, a project application that meets all of the following conditions:

(a) the project is located within the Planned Action Area identified in Exhibit A of this Ordinance;

(b) the proposed uses and activities are consistent with those described in the Planned Action EIS and Subsection III.D of this Ordinance;

(c) the project is within the Planned Action thresholds and other criteria of Subsection III.D of this Ordinance;

(d) the project is consistent with the Shoreline Comprehensive Plan including the policies of the Aurora Square Community Renewal Plan and the Shoreline Municipal Code;

(e) the project's significant adverse environmental impacts have been identified in the Planned Action EIS;

(f) the project's significant impacts have been mitigated by application of the measures identified in Exhibit C of this Ordinance and other applicable City regulations, together with any conditions, modifications, variances, or special permits that may be required;

(g) the project complies with all applicable local, state and/or federal laws and regulations and the SEPA Responsible Official determines that these constitute adequate mitigation; and

(h) the project is not an essential public facility as defined by RCW 36.70A.200, unless the essential public facility is accessory to or part of a development that is designated as a Planned Action Project under this Ordinance.

(2) The City shall base its decision to qualify a project as a Planned Action Project on review of the Subarea SEPA Checklist form included in Exhibit B to this Ordinance and review of the Planned Action Project submittal and supporting documentation, provided on City required forms.

F. Effect of Planned Action Designation.

(1) Designation as a Planned Action Project by the City's SEPA Responsible Official means that a qualifying project application has been reviewed in accordance with this Ordinance and found to be consistent with the development parameters and thresholds established herein and with the environmental analysis contained in the Planned Action EIS.

(2) Upon determination by the City's SEPA Responsible Official that the project application meets the criteria of Subsection III.D and qualifies as a Planned Action Project, the project shall not require a SEPA threshold determination, preparation of an EIS, or be subject to further review pursuant to SEPA. Planned Action

Projects will still be subject to all other applicable City, state, and federal regulatory requirements. The Planned Action Project designation shall not excuse a project from meeting the City's code and ordinance requirements apart from the SEPA process.

G. Planned Action Project Permit Process. Applications submitted for qualification as a Planned Action Project shall be reviewed pursuant to the following process:

(1) Development applications shall meet all applicable requirements of the Shoreline Municipal Code and this Ordinance in place at the time of the Planned Action Project application. Planned Action Projects shall not vest to regulations required to protect public health and safety.

(2) Applications for Planned Action Projects shall:

(a) be made on forms provided by the City;

(b) include the Subarea SEPA checklist included in Exhibit B of this Ordinance;

(c) include a conceptual site plan pursuant to SMC 20.30.315 Site Development Permit; and

(d) meet all applicable requirements of the Shoreline Municipal Code and this Ordinance.

(3) The City's SEPA Responsible Official shall determine whether the application is complete and shall review the application to determine if it is consistent with and meets all of the criteria for qualification as a Planned Action Project as set forth in this Ordinance.

(4) (a) If the City's SEPA Responsible Official determines that a proposed project qualifies as a Planned Action Project, he/she shall issue a "Determination of Consistency" and shall mail or otherwise verifiably deliver said Determination to the applicant; the owner of the property as listed on the application; and federally recognized tribal governments and agencies with jurisdiction over the Planned Action Project, pursuant to RCW 43.21C.440.

(b) Upon issuance of the Determination of Consistency, the review of the underlying project permit(s) shall proceed in accordance with the applicable permit review procedures specified in SMC Chapter 20.30 Procedures and Administration, except that no SEPA threshold determination, EIS, or additional SEPA review shall be required.

(c) The Determination of Consistency shall remain valid and in effect as long as the underlying project application approval is also in effect.

(d) Public notice and review for qualified Planned Action Projects shall be tied to the underlying project permit(s). If notice is otherwise required for the underlying permit(s), the notice shall state that the project qualifies as a Planned Action Project. If notice is not otherwise required for the underlying project permit(s), no special notice is required by this Ordinance.

(5) (a) If the City's SEPA Responsible Official determines that a proposed project does not qualify as a Planned Action Project, he/she shall issue a "Determination of Inconsistency" and shall mail or otherwise verifiably deliver said Determination to the applicant; the owner of the property as listed on the application; and federally recognized tribal governments and agencies with jurisdiction over the Planned Action Project, pursuant to RCW 43.21C.440.

(b) The Determination of Inconsistency shall describe the elements of the Planned Action Project application that result in failure to qualify as a Planned Action Project.

(c) Upon issuance of the Determination of Inconsistency, the City's SEPA Responsible Official shall prescribe a SEPA review procedure for the non-qualifying project that is consistent with the City's SEPA regulations and the requirements of state law.

(d) A project that fails to qualify as a Planned Action Project may incorporate or otherwise use relevant elements of the Planned Action EIS, as well as other relevant SEPA documents, to meet the non-qualifying project's SEPA requirements. The City's SEPA Responsible Official may limit the scope of SEPA review for the non-qualifying project to those issues and environmental impacts not previously addressed in the Planned Action EIS.

(6) To provide additional certainty about applicable requirements, the City or applicant may request consideration and execution of a development agreement for a Planned Action Project, consistent with RCW 36.70B.170 et seq.

(7) A Determination of Consistency or Inconsistency is a Type A land use decision and may be appealed pursuant to the procedures established in Chapter 20.30 SMC. An appeal of a Determination of Consistency shall be consolidation with any pre-decision or appeal hearing on the underlying project application.

Section IV. *Monitoring and Review*.

A. The City should monitor the progress of development in the designated Planned Action area as deemed appropriate to ensure that it is consistent with the assumptions of this Ordinance and the Planned Action EIS regarding the type and amount of development and associated impacts and with the mitigation measures and improvements planned for the Planned Action Area.

B. This Planned Action Ordinance shall be reviewed by the SEPA Responsible Official no later than five (5) years from its effective date in conjunction with the City's regular Comprehensive Plan review cycle, as applicable. The timing of subsequent reviews after the first review shall be determined with the completion of the first review. The review shall determine the continuing relevance of the Planned Action assumptions and findings with respect to environmental conditions in the Planned Action Area, the impacts of development as analyzed in the Planned Action Checklist (Exhibit B), required mitigation measures (Exhibit C) and Public Agency Actions and Commitments (Exhibit D). Based upon this review, the City may propose amendments to this Ordinance or may supplement or revise the Planned Action EIS.

Section V. *Conflict*. In the event of a conflict between this Ordinance or any mitigation measures imposed thereto, and any ordinance or regulation of the City, the provisions of this Ordinance shall control.

Section VI. *Severability*. If any one or more sections, subsections, or sentences of this Ordinance are held to be unconstitutional or invalid such decision shall not affect the validity of the remaining portions of this Ordinance and the same shall remain in full force and effect.

Section VII. *Effective Date*. This Ordinance shall take effect and be in force ten (10) days after publication as provided by law.

Passed by the City Council of the City of Shoreline the XXth day of XX 2015.

Mayor

ATTESTED:

PUBLISHED: XX, 2015

EFFECTIVE: XX, 2015

City Clerk

APPROVED AS TO FORM:

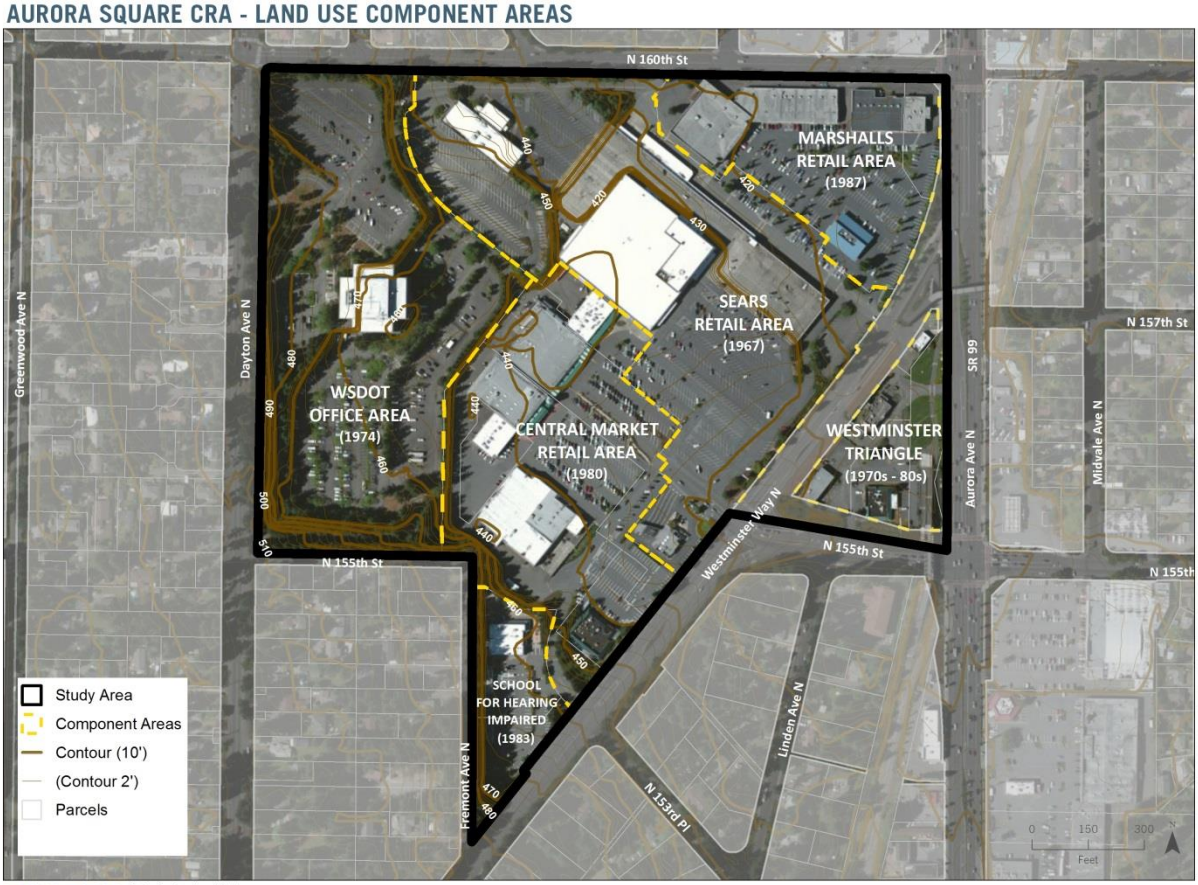
City Attorney

EXHIBIT A

Planned Action Area

The Planned Action includes the CRA parcels and the abutting rights of way.

AURORA SQUARE CRA - LAND USE COMPONENT AREAS



BERK Date: September 2014
Source: City of Shoreline, King County, BERK

EXHIBIT B

Planned Action Checklist

Note: SEPA allows a customized checklist to be integrated into the Planned Action Ordinance. Alternatively, the standard SEPA Checklist can be used.

EXHIBIT C

Planned Action Ordinance Mitigation Document
Mitigation Required for Development Applications

INTRODUCTION

The Planned Action EIS has identified significant beneficial and adverse impacts that are anticipated to occur with the future development of the Planned Action Area, together with a number of possible measures to mitigate those significant adverse impacts. Please see Final EIS Chapter 1 Summary for a description of impacts, mitigation measures, and significant unavoidable adverse impacts.

A Mitigation Document is provided in this **Exhibit C** to establish specific mitigation measures based upon significant adverse impacts identified in the Planned Action EIS. The mitigation measures in this **Exhibit C** shall apply to Planned Action Project applications that are consistent with the Preferred Alternative range reviewed in the Planned Action EIS and which are located within the Planned Action Area (see **Exhibit A**).

Where a mitigation measure includes the words "shall" or "will," inclusion of that measure in Planned Action Project application plans is mandatory in order to qualify as a Planned Action Project. Where "should" or "would" appear, the mitigation measure may be considered by the project applicant as a source of additional mitigation, as feasible or necessary, to ensure that a project qualifies as a Planned Action Project. Unless stated specifically otherwise, the mitigation measures that require preparation of plans, conduct of studies, construction of improvements, conduct of maintenance activities, etc., are the responsibility of the applicant or designee to fund and/or perform.

Any and all references to decisions to be made or actions to be taken by the City's SEPA Responsible Official may also be performed by the City's SEPA Responsible Official's authorized designee.

MITIGATION MEASURES

See Draft EIS Chapter 1 for a list of mitigation measures that would be integrated with more details on responsibility and timing in the Planned Action Ordinance.

Land Use

Light and Glare

Transportation

Stormwater

Sewer and Water

Schools and Parks

EXHIBIT D

Public Agency Actions and Commitments

INTRODUCTION

Under some elements of the Planned Action EIS, specific City or other agency actions are identified. Generally, incorporation of these actions is intended to provide for implementing regulations and infrastructure investments in order to document pending City actions; to establish a protocol for long-term measures to provide for coordination with other agencies; or to identify optional actions that the City may take to reduce impacts. These actions are listed below in Table D.1.

Actions identified as "Proposed Concurrent Actions" refer to legislative actions proposed for adoption together with the Preferred Alternative. Longer term and other agency actions will occur in the future, depending on need. The projected timeframe and responsible departments are identified and will be used in monitoring the implementation of this Ordinance.

This Exhibit D will be used in the monitoring process established in Section IV of this Ordinance.

Table C.1
Public Agency Mitigation Measures

Mitigation Measures	Proposed Synchronous Amendments	Short Term: Next Comp Plan Amendment Cycle or within 5 years	Long Term	Other Agency	Estimated Year of Implementation and Responsible Department